Allied Paper, Inc./Portage Creek/ Kalamazoo River Superfund Site Kalamazoo, Michigan

Final Technical Memorandum 14 Biota Investigation

Appendix E

Data Quality Review Reports
Volume III

January 2002

Technical Memorandum

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39563

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39563 for the biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and qualified sample results. Analyses were performed on the following samples:

| | | | | 39. | Analy | reis |
|--------------|--------|---------|-------------|-------------------|-----------------|--------|
| Sample ID | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %lipid |
| K40134F | 215477 | bass | fillet | Lake Allegan | x | х |
| K40134R | 215478 | bass | carcass | Lake Allegan | | × |
| K40139F | 215479 | bass | fillet | Lake Allegan | X | . x |
| K40139R | 215480 | bass | carcass | Below Allegan Dam | | × |
| K40159F | 215494 | bass | fillet | Below Allegan Dam | × | × |
| K40159R | 215495 | bass | carcass | Below Allegan Dam | | × |
| K40160F | 215496 | bass | fillet | Below Allegan Dam | x | × |
| K40160R | 215497 | bass | carcass | Below Allegan Dam | | × |
| K40161F | 215498 | bass | fillet | Below Allegan Dam | x | X |
| K40161R | 215499 | bass | carcass | Below Allegan Dam | | x |
| K40162F | 215500 | bass | fillet | Below Allegan Dam | X | × |
| K40162R | 215501 | bass | carcass | Below Allegan Dam | | x |
| K40163F | 215502 | bass | fillet | Below Allegan Dam | x | х |
| K40163R | 215503 | bass | carcass | Below Allegan Dam | | × |
| K40164F | 215504 | bass | fillet | Below Allegan Dam | х | х |
| K40164R | 215505 | bass | carcass | Below Allegan Qam | | x |
| K40165F | 215506 | bass | fillet | Below Allegan Dam | х | x |
| K40165R | 215507 | bass | carcass | Below Allegan Dam | | x |
| K40166F | 215508 | bass | fillet | Below Allegan Dam | х | x |
| K40166R | 215509 | bass | carcass | Below Allegan Dam | | x |
| K40171F | 215523 | bass | fillet | Below Allegan Dam | × | х |
| K40171R | 215524 | bass | carcass | Below Allegan Dam | | x |
| K40172F | 215525 | bass | fillet | Below Allegan Dam | × | x |
| K40172R | 215526 | bass | carcass | Below Allegan Dam | | × |
| K40173F | 215534 | bass | fillet | Below Allegan Dam | x | x |
| K40173R | 215528 | bass | carcass | Below Allegan Dam | | × |
| K40190F* | 215487 | bass | fillet | Near Saugatuck | х | × |
| K40190R | 215535 | bass | carcass | Near Saugatuck | | × |

| Sample | | | | | Anai | ysis |
|---------|--------|---------|-------------|-----------------|-----------------|--------|
| ID . | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %lipid |
| K40191F | 215536 | bass | fillet | Near Saugatuck | x | x |
| K40191R | 215537 | bass | carcass | Near Saugatuck | | × |

^{*} MS/MSD/DUP performed on sample

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

There is no specified holding time from collection to extraction for PCB analysis of biota samples. The specified holding time from extraction to analysis is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method, field, or rinse blanks are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure cross contamination of samples during field operations.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40134F and K40139F. All data for these samples have been qualified as estimated. Samples K40190FMS and K40190FMSD had recovery of one surrogate below acceptable control limits. No qualifiers were added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike recoveries and relative percent differences (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within specified control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|----------|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | <u> </u> | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u> x</u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | •. | | |
| Blanks | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | X | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------|-------------|-------------|
| Is the chromatographic performance acceptable for each instrument? | x | | |
| Do any method/reagent/instrument blanks have positive results? | | <u> </u> | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | <u> </u> | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | <u> </u> | | |
| Aroclor 1248 | <u> </u> | | |
| Aroclor 1254 | X | | |
| Instrument Blanks | <u> </u> | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | <u>x</u> | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | x | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | * X | | |
| Are %D values for all compounds within limits (less than 15%)? | x | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|----------|-------------|----|
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | x | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Li | mits | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> </u> | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding | Surrogates | - Calumn 1 | Surrogates | Column 2 |
|------------|------------|------------|------------|------------|----------|
| | Time | тсх | DCB | тсх | DCB |
| K40134F | OK for all | ↓ (39) | ↓ (56) | ↓ (39) | ↓ (53) |
| K40139F | samples | ↓ (39) | ↓ (57) | ↓ (39) | ↓ (56) |
| K40159F | | | | | |
| K40160F | | | | | |
| K40161F | | | | | |
| K40162F | | | | | |
| K40163F | | | | | |
| K40164F | | | | | |
| K40165F | | | | | |
| K40166F | | | | | |
| K40171F | | | | | |
| K40172F | | | | | |
| K40173F | | | | | |
| K40190F | | | | | |
| K40190FMS | | ↓ (57) | | ↓ (57) | |
| K40190FMSD | | ↓ (53) | | ↓ (53) | |
| K40191F | | | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 4/30/94 0543 | 5/4 | 5/4 | 5/4 | 5/4 | 5/4 | 5/4 |
|----------------------|-------------------|---------------|---------------|---------------|---------------|--------------|---------------|
| Time: | to 5/1/94 0106 | 0434 | 0509 | 1200 | 1234 | 1925 | 1959 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. |
| | %RSD | % D | % D | % D | % D | %D | % D |
| Aroclor 1016 | 4.2 / 4.4 | | | | 3.5 | | |
| Aroclor 1221 | 5.1 / 6.9 | | | | | - | <u> </u> |
| Aroclor 1232 | 4.2 / 3.1 | | | | | - | |
| Aroclor 1242 | 3.1 / 3.4 | | | ļ | | | 3.5 |
| Aroclor 1248 | 3.4 / 3.0 | 3.5 | | 4.0 | | 4.5 | |
| Arocior 1254 | 3.1 / 3.6 | | | | | | |
| Arocior 1260 | 3.8 / 3.4 | | 8.0 | | | | |
| Tetrachloro-m-xylene | 5.2 / 6.4 | | | | | | |
| Decachlorobiphenyl | 7.9 / 8.1 | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 | 5/5 |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 0250 | 0324 | 1014 | 1048 | 2309 | 2343 |
| | Initial Cat. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D | % D | %D | % D | % D |
| Aroclor 1016 | | | | | | | 6.0 |
| Arocior 1221 | | | | | | | |
| Aroclor 1232 | | | | | | | |
| Araclar 1242 | | | | | | | |
| Aroclor 1248 | | 2.0 | | 1.0 | | 0.5 | |
| Aroclor 1254 | | | 5.0 | | | | |
| Araclar 1260 | | | | | 1.0 | | |
| Tetrachioro-m-xylene | | | | | | ļ | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date; | | 5/9 | 5/9 | 5/10 | 5/10 | | |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 1255 | 1830 | 0423 | 0457 | | |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D | %D | %D | % D | % D |
| Arociar 1016 | | | | | 0.5 | | <u> </u> |
| Araclar 1221 | | | | | | | |
| Aroclor 1232 | | | | | | | |
| Aroclor 1242 | | | | | | | <u> </u> |
| Aroclor 1248 | | 3.0 | | 5.0 | | | |
| Aroclor 1254 | | | | | | | |
| Aroclor 1260 | | | 3.0 | | | | <u> </u> |
| Tetrachloro-m-xylene | | | | | | <u> </u> | <u> </u> |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

EPA SAMPLE NO.

K40134F

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO

SDG: 39563

BIOTA Lab Sample ID: 215477 Phase Type: 10.0 Phase Weight: Date Received: 09/18/93 (g) Date Extracted: Injection Volume: __ 1.0 (uL) 03/31/94 Dilution Factor: ___ 5.0 Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

| CAS N | O. COMPOU | IND CONCENTRATIO (mg/Kg) | N Q |
|---------|-----------------|--------------------------|-----------|
| 12674-1 | 1-2 Aroclor-10 | 0.64 | J |
| 11104-2 | 8-2 Aroclor-12 | 221 0.25 | UJ |
| 11141-1 | 6-5 Aroclor-12 | 232 0.25 | 0.7 |
| 53469-2 | 1-9 Aroclor-12 | 242 0.25 | 07 |
| 12672-2 | 9-6 Aroclor-12 | 248 0.25 | U-7 |
| 11097-6 | 9-1 Aroclor-12 | 254 1.5 | 17 |
| 11096-8 | 32-5 Aroctor-12 | 260 0.25 | <u>03</u> |

EPA SAMPLE NO. K40139F Lab Code: **AQUAI** Lab Name: Aquatec, inc. Case: SDG: __ 39563 91082 BIO Contract: Lab Sample ID: 215479 Phase Type: _ **BIOTA** Date Received: Phase Weight: 10.0 **(g)** 09/18/93 Injection Volume: 1.0 (uL) Date Extracted: 03/31/94 5.0 Date Analyzed: 05/04/94 Dilution Factor: _ Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 1.7 | J |
| 11104-28-2 | Aroclor-1221 | 0.25 | U 7 |
| 11141-16-5 | Aroclor-1232 | 0.25 | U.J |
| 53469-21-9 | Aroclor-1242 | 0.25 | UJ |
| 12672-29-6 | Aroclor-1248 | 0.25 | דט |
| 11097-69-1 | Aroclor-1254 | 1.3 | T |
| 11096-82-5 | Aroclor-1260 | 0.25 | บภ |

EPA SAMPLE NO. K40159F Lab Code: _ Lab Name: Aquatec, Inc. AQUAL Case: ___ SDG: ___ 91082 BIO 39563 Contract: Phase Type: 215494 **BIOTA** Lab Sample ID: Phase Weight: 10.0 (g) Date Received: 09/23/93 Injection Volume: 1.0 (uL) Date Extracted: 04/04/94 Dilution Factor: _ 5.0 Date Analyzed: 05/04/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 1.0 | |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 1.2 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | U |

EPA SAMPLE NO. K40160F AQUAI Lab Code: Lab Name: Aquatec, Inc. SDG: _ 39563 Case: BIO 91082 Contract: Lab Sample ID: 215496 **BIOTA** Phase Type: Date Received: 09/23/93 10.0 Phase Weight: (g) 04/04/94 Date Extracted: Injection Volume: 1.0 (uL) 05/05/94 Dilution Factor: _ Date Analyzed: 2.0 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | U |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Arocior-1232 | 0.10 | U |
| 53469-21-9 | Arocior-1242 | 0.10 | U |
| 12672-29-6 | Arocior-1248 | 0.36 | |
| 11097-69-1 | Aroclor-1254 | 0.69 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | U |
| | | | |

EPA SAMPLE NO.

K40161F Lab Code: IAUDA Lab Name: Aquatec, Inc. 91082 Case: BIO SDG: _ 39563 Contract: _ **BIOTA** Lab Sample ID: 215498 Phase Type: Phase Weight: __ 10.0 (g) Date Received: 09/23/93 Injection Volume: _ 1.0 (uL) Date Extracted: 04/04/94 Dilution Factor: _ 5.0 Date Analyzed: 05/04/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | C |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | ι |
| 11104-28-2 | Aroclor-1221 | 0.25 | ι |
| 11141-16-5 | Aroclor-1232 | 0.25 | ι |
| 53469-21-9 | Aroclor-1242 | 0.83 | |
| 12672-29-6 | Aroclor-1248 | 0.25 | l |
| 11097-69-1 | Aroclor-1254 | 1.4 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | ĺ |

EPA SAMPLE NO.

K40162F

 Lab Name:
 Aquatec, Inc.
 Lab Code:
 AQUAI

 Contract:
 91082
 Case:
 BIO
 SDG:
 39563

Lab Sample ID: 215500 Phase Type: **BIOTA** Phase Weight: Date Received: 09/23/93 10.0 (g) Injection Volume: (uL) 04/04/94 1.0 Date Extracted: Dilution Factor: 5.0 Date Analyzed: 05/04/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.55 | |
| 11104-28-2 | Aroclor-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 1.4 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | ٦ |

EPA SAMPLE NO. K40163F Lab Name: Aquatec, Inc. Lab Code: IAUDA 91082 Case: BIO SDG: 39563 Contract: **BIOTA** Lab Sample ID: 215502 Phase Type: Phase Weight: 10.0 Date Received: 09/23/93 (g) Injection Volume: __ 1.0 (uL) Date Extracted: 04/04/94 05/04/94 Date Analyzed: Dilution Factor: _ 2.0 Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.46 | |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | υ |
| 12672-29-6 | Aroclor-1248 | 0.10 | U |
| 11097-69-1 | Aroclor-1254 | 1.1 | |
| 11096-82-5 | Arocior-1260 | 0.10 | U |

(Y/N)

EPA SAMPLE NO. K40164F Lab Code: Lab Name: Aquatec, Inc. IAUDA SDG: Contract: _ 91082 Case: BIO 39563 Phase Type: _ **BIOTA** Lab Sample ID: 215504 Phase Weight: 10.0 (g) Date Received: 09/23/93 Injection Volume: 1.0 (uL) Date Extracted: 04/04/94 Date Analyzed: Dilution Factor: 5.0 05/04/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.62 | |
| 11104-28-2 | Aroclor-1221 | 0.25 | Į |
| 11141-16-5 | Aroclor-1232 | 0.25 | ι |
| 53469-21-9 | Aroclor-1242 | 0.25 | ι |
| 12672-29-6 | Aroclor-1248 | 0.25 | l |
| 11097-69-1 | Aroclor-1254 | 1.8 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | |

EPA SAMPLE NO. K40165F Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 Case: BIO SDG: 39563 Contract: 215506 Phase Type: **BIOTA** Lab Sample ID: 10.0 Phase Weight: Date Received: 09/23/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/04/94 Dilution Factor: 2.0 Date Analyzed: 05/04/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | U |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | U |
| 12672-29-6 | Aroclor-1248 | 0.70 | |
| 11097-69-1 | Aroclor-1254 | 0.77 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | U |

Sulfur Clean-up:

Ν

(Y/N)

EPA SAMPLE NO. K40166F Lab Code: **AQUAI** Lab Name: Aquatec, Inc. 91082 39563 Case: __ BIO SDG: Contract: **BIOTA** 215508 Phase Type: Lab Sample ID: 10.0 09/23/93 Phase Weight: Date Received: (g) Injection Volume: 1.0 (uL) Date Extracted: 04/04/94 2.0 Date Analyzed: 05/04/94 Dilution Factor: Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.10 | U |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.87 | |
| 12672-29-6 | Aroclor-1248 | 0.10 | U |
| 11097-69-1 | Aroclor-1254 | 0.85 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | υ |

EPA SAMPLE NO. K40171F Lab Name: Aquatec, Inc. Lab Code: IAUDA 91082 Case: BIO SDG: 39563 Contract: Phase Type: **BIOTA** Lab Sample ID: 215523 Phase Weight: 10.0 Date Received: 10/07/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/04/94 2.0 Dilution Factor: Date Analyzed: 05/10/94 (Y/N) Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.41 | |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | υ |
| 12672-29-6 | Aroclor-1248 | 0.10 | U |
| 11097-69-1 | Aroclor-1254 | 1.2 | |
| 11096-82-5 | Aroclor-1260 | 0.089 | J |
| | | | |

EPA SAMPLE NO. K40172F Lab Name: Aquatec, Inc. Lab Code: **AQUAI** SDG: 39563 Contract: 91082 Case: BIO Lab Sample ID: 215525 Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: 10/07/93 (g) Injection Volume: 1.0 Date Extracted: 04/04/94 (uL) Dilution Factor: 2.0 Date Analyzed: 05/10/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | Ų |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | L |
| 53469-21-9 | Aroclor-1242 | 1.1 | |
| 12672-29-6 | Aroclor-1248 | 0.10 | l |
| 11097-69-1 | Aroclor-1254 | 1.3 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | ί |

K40173F

Lab Code: AQUAI

Case: BIO SDG: 39563

Lab Sample ID: 215534

0.10

U

EPA SAMPLE NO.

Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: _ 10/07/93 (g) Date Extracted: 04/04/94 Injection Volume: 1.0 (uL) 2.0 Dilution Factor: Date Analyzed: 05/10/94 Sulfur Clean-up: (Y/N)

Aroclor-1260

Lab Name: Aquatec, Inc.

91082

11096-82-5

Contract:

CAS NO. CONCENTRATION COMPOUND Q (mg/Kg) 12674-11-2 Aroclor-1016 U 0.10 11104-28-2 Aroclor-1221 0.10 U 11141-16-5 Aroclor-1232 0.10 U 53469-21-9 Aroclor-1242 0.91 12672-29-6 Aroclor-1248 0.10 11097-69-1 Aroclor-1254 1.2

EPA SAMPLE NO.

K40190F Lab Code: Lab Name: Aquatec, Inc. AQUAI SDG: _ 39563 Contract: 91082 Case: BIO Lab Sample ID: 215487 Phase Type: ___ **BIOTA** 10/08/93 Phase Weight: 10.0 Date Received: (g) 1.0 04/04/94 Injection Volume: _ (uL) Date Extracted: Dilution Factor: ____ 1.0 Date Analyzed: 05/04/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION | _ |
|------------|--------------|---------------|---|
| | | (mg/Kg) | |
| 12674-11-2 | Aroclor-1016 | 0.050 | ι |
| 11104-28-2 | Arocior-1221 | 0.050 | ί |
| 11141-16-5 | Aroclor-1232 | 0.050 | ι |
| 53469-21-9 | Aroclor-1242 | 0.050 | ι |
| 12672-29-6 | Aroclor-1248 | 0.21 | |
| 11097-69-1 | Aroclor-1254 | 0.45 | |
| 11096-82-5 | Aroclor-1260 | 0.17 | |

EPA SAMPLE NO.

K40191F Lab Code: Lab Name: Aquatec, Inc. AQUAI Case: __ 39563 91082 BIO SDG: · Contract: ____ Lab Sample ID: Phase Type: ____ **BIOTA** 215536 Phase Weight: 10.0 (g) Date Received: 10/08/93 Injection Volume: 1.0 Date Extracted: 04/04/94 (uL) Dilution Factor: ____ 1.0 Date Analyzed: 05/05/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | С |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.23 | |
| 11104-28-2 | Aroclor-1221 | 0.050 | ί |
| 11141-16-5 | Aroclor-1232 | 0.050 | Ĺ |
| 53469-21-9 | Aroclor-1242 | 0.050 | l |
| 12672-29-6 | Aroclor-1248 | 0.050 | ι |
| 11097-69-1 | Aroclor-1254 | 0.58 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | ī |

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were low for both surrogates in sample K40134F. All data for this sample have been qualified as estimated based on the deviation. Sample K40139F had one surrogate recovery below acceptable control limits. No qualifiers have been added to this sample based on surrogate recovery. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40134F | Aldrin gamma-Chlordane 4,4'-DDE cis-Nonachlor 4,4'-DDT | 75.8% 125.0% 27.4% 30.8% 584.6% |
|---------|--|---|
| K40139F | Aldrin gamma-Chlordane Dieldrin | 59.2% 113.3% 60.0% |
| K40159F | Aldrin gamma-Chlordane Dieldrin cis-Nonachlor | 66.7% 107.1% 41.2% 45.5% |
| K40160F | Aldrin gamma-Chlordane 4,4'-DDE cis-Nonachlor | 130.4% 110.0% 27.3% 56.6% |
| K40161F | Aldrin gamma-Chlordane Dieldrin cis-Nonachlor | 90.0% 87.5% 115.4% 58.3% |
| K40162F | Aldrin gamma-Chlordane Dieldrin cis-Nonachlor | 122.2% 91.7% 108.3% 60.0% |

| K40163F | Aldrin gamma-Chlordane 4,4'-DDE cis-Nonachlor | 100.0% 90.9% 26.8% 62.5% |
|---------|--|------------------------------------|
| K40164F | Aldrin gamma-Chlordane cis-Nonachlor | 132.4% 88.9% 71.4% |
| K40165F | Aldrin gamma-Chlordane 4,4'-DDE Dieldrin | 125.7% 75.0% 27.1% 115.4% |
| P40166F | Aldrin gamma-Chlordane 4,4'-DDE | 103.6% 81.8% 26.4% |
| K40171F | Aldrin gamma-Chlordane cis-Nonachlor | 100.0% 116.7% 74.4% |
| K40172F | Aldrin gamma-Chlordane Dieldrin cis-Nonachlor | 83.3% 105.9% 130.8% 53.8% |
| K40173F | Aldrin gamma-Chlordane Dieldrin cis-Nonachlor | 86.7% 117.6% 106.7% 58.3% |
| K40190F | Aldrin gamma-Chlordane cis-Nonachlor | 93.3% 133.3% 74.6% |
| K40191F | Aldrin gamma-Chlordane 4,4'-DDE | 93.8% 124.1% 25.7% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were high in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers were added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

| | YES | NO | NA |
|--|----------|----|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | <u> </u> | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| 2_ out of8_ | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| out of | | | |
| Blanks | | | |
| is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | x | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | X | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|-------------|-------------|----|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any trip/field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts problanks, and MS/MSD? | esent for a | ali samples | 1 |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | <u></u> | |
| Toxaphene multipoint calibration | X | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | × | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | X | | |
| Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | X | | |
| is Form VII-1 present for each BCS analyzed for both columns? | X | | |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | X | | |
| Is Form VII-2 present and complete for each mid-point standard analyzed? | X | | |
| Are RPD values for all compounds < 25%? | X | | |
| Analytical Sequence Check | | | |
| ls Form VIII present and complete for each column and each period of analyses? | X | | |

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA |
|---|----------|----------|----|
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | X | - | · |
| Are all samples listed on the form? | <u> </u> | | |
| If GPC cleanup was performed, is Form IX-2 present? | | <u> </u> | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | X | | |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| ls a Form X present for every sample in which a pesticide or PCB was detected? | <u> </u> | | |
| Was GC/MS confirmation provided when required? | | | X |
| Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | X | |
| Were there any false negatives? | | X | |
| Compound Quantitation and Reported Detection Limit | s | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | <u> </u> | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates | Column 2 |
|------------|------------|------------|---------------|------------|----------|
| | Time | тсх | DCB | тсх | DCB |
| K40134F | OK for all | ↓ (53) | ↓ (52) | ↓ (53) | ↓ (51) |
| K40139F | samples | | ↓ (59) | | ↓ (57) |
| K40159F | | - | | | |
| K40160F | | | | | |
| K40161F | | | | | |
| K40162F | | | | | |
| K40163F | | | | | |
| K40164F | | | | | |
| K40165F | | | | | |
| K40166F | | | | | |
| K40171F | | | | | |
| K40172F | | | | | |
| K40173F | | | | <u> </u> | |
| K40190F | | - | | | - |
| K40190FMS | | | | | |
| K40190FMSD | | | | | |
| K40191F | | | | | |

Surrogates: TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogate diluted out Recovery high Recovery low D

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 4/26/94 | 5/1 | 5/1 | 5/2 | 5/2 | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|--------------|---------------|
| Time: | 20:30 | 08:27 | 17:28 | 01:43 | 14:08 | | |
| , | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. |
| | %RSD | %D | %D | % D | % D | %D | % D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | <u> </u> | |
| 3-Bromobiphenyl | | | | | | <u> </u> | |
| 4-Bromobiphenyl | | | | <u></u> | <u> </u> | | <u> </u> |
| Hexachlorobenzene | | | | | | <u> </u> | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | _ | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachior | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | <u> </u> |
| 4,4'-DDD | | | | | | | <u> </u> |
| cis-Nonachlor | | | | | <u> </u> | <u> </u> | <u> </u> |
| 4,4'-DDT | | | | | | <u> </u> | <u> </u> |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | <u> </u> | | <u> </u> | <u> </u> |
| Decachlorobiphenyl | | | | | <u> </u> | <u> </u> | |
| Affected Samples: | | | _ | | | | |
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Pesticide/PBB Calibration Summary - Page 2

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 4/26/94 | 5/1 | 5/1 | 5/2. | 5/2 | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 20:30 | 08:27 | 17:23 | 01:43 | 14:08 | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D | % D | % D | % D | %D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | | <u> </u> |
| 3-Bromobiphenyl | | | ! | | | <u></u> | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | | <u> </u> |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 3

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 5/5/94 | 5/6 | | | | | |
|-----------------------------|-----------------|--------------|---------------|---------------|---------------|---------------|---------------|
| Time; | 16:20 | 06:37 | | | | | |
| | Initial Cal, | Cont. Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | % D | % D | %D | %D |
| 2-Bromobiphenyl | ok | ok | | | <u> </u> | | |
| 3-Bromobiphenyl | · | | | | | <u> </u> | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | <u></u> | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | <u> </u> | | | |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | <u></u> | | <u></u> | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 4

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/5/94 | 5/6 | | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 16:20 | 06:37 | | | | | |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Gont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | %D | % D | %D | % D |
| 2-Bromobiphenyl | ok | ok | | | | | |
| 3-Bromobiphenyl | | | | | <u> </u> | | <u></u> |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | <u> </u> | | | <u> </u> | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | <u> </u> | |
| 4,4'-DDD | | | | ļ | | | |
| cis-Nonachlor | · | <u> </u> | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | <u> </u> | |
| Toxaphene | | | | | | | |
| Tetrachioro-m-xylene | | | | | •. | ļ <u>.</u> | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| ſ | | | | | | | |

Corrected Sample Analysis Data Sheets

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40134F

39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215477

 Date Received:
 09/18/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|--------------------------|-----|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | 0.1 | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | 77 | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U 7 | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | UJ | |
| 58-89-9 | gamma-BHC | 0.0050 | 07 | |
| 309-00-2 | Aldrin | 0.033 | JN | |
| 1024-57-3 | Heptachlor Epoxide | 0.030 | J | |
| 5103-74-2 | gamma-Chlordane | 0.012 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ | |
| 39765-80-5 | trans-Nonachior | 0.0050 | UJ | |
| 72-55-9 | 4,4'-DDE | 0.062 | - | |
| 60-57-1 | Dieldrin | 0.010 | UJ | |
| 72-54-8 | 4,4'-DDD | 0.016 | | |
| 5103-73-1 | cis-Nonachlor | 0.013 | 4 | |
| 50-29-3 | 4,4'-DDT | 0.013 | | FR |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ | |
| 8001-35-2 | Toxaphene | 0.20 | UJ | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40139F

39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215479

 Date Received:
 09/18/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.049 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.032 | R |
| 5103-71-9 | alpha-Chlordane | 0.0053 | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.067 | |
| 60-57-1 | Dieldrin | 0.015 | JN |
| 72-54-8 | 4,4'-DDD | 0.022 | |
| 5103-73-1 | cis-Nonachlor | 0.013 | |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40159F

SDG: <u>39563</u>

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215494

 Date Received:
 09/23/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| | | l l | 1 | |
|------------|--------------------|-----------------------|-----|---|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | • |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.042 | 172 | |
| 1024-57-3 | Heptachlor Epoxide | 0.043 | | |
| 5103-74-2 | gamma-Chlordane | 0.014 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0070 | | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.083 | | |
| 60-57-1 | Dieldrin | 0.017 | ſ. | |
| 72-54-8 | 4,4'-DDD | 0.022 | | |
| 5103-73-1 | cis-Nonachlor | 0.01 T | 7 | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |
| | | | | |

 Lab Name:
 Aquatec, Inc.
 K40160F

 Lab Code:
 AQUAI
 SDG:
 39563

 Case:
 BIO
 SDG:
 215496

 Phase Type:
 Biota
 Date Received:
 09/23/94

Client ID No.

| rnase Type: | blota | Date neceived: | 09/23/94 |
|------------------|---------|------------------|----------|
| Phase Weight: | 10.0 g | Date Extracted: | 04/04/94 |
| Extraction: | Soxhlet | Date Analyzed: | 05/01/94 |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N |
| | | _ | |
| | | | |
| | | | |
| | | | |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.023 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.028 | | |
| 5103-74-2 | gamma-Chlordane | 0.010 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | • |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.055 | 7 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0083 | JN | |
| 50-29-3 | 4,4'-DDT | 0.010 | υ | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40161F

39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215498

 Date Received:
 09/23/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.040 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.046 | |
| 5103-74-2 | gamma-Chlordane | 0.016 | JN |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.087 | |
| 60-57-1 | Dieldrin | -0.013 | |
| 72-54-8 | 4,4'-DDD | 0.019 | |
| 5103-73-1 | cis-Nonachlor | 0.012 | JN |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | υ |

Client ID No. K40162F Aquatec, Inc. Lab Name: Lab Code: IAUDA Contract: 91082 39563 BIO SDG: Case: Lab Sample ID: 215500 Phase Type: **Biota** Date Received: 09/23/94 04/04/94 Phase Weight: 10.0 Date Extracted: 05/01/94 Extraction: Soxhlet Date Analyzed: 1.0 Dilution Factor: Sulfur Clean-up:

| CAS | NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|--------|------|--------------------|--------------------------|----|----|
| 2052- | 07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113- | 57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-6 | 6-0 | 4-Bromobiphenyl | 0.010 | U | 1 |
| 118-7 | 4-1 | Hexachlorobenzene | 0.0050 | U | 1 |
| 58-89 | 9-9 | gamma-BHC | 0.0050 | U | 1 |
| 309-0 | 0-2 | Aldrin- | 0.027 | | IR |
| 1024- | 57-3 | Heptachlor Epoxide | 0.030 | | 1 |
| 5103 | 74-2 | gamma-Chlordane | 0.012 | | IR |
| 5103- | 71-9 | alpha-Chlordane | 0.0050 | U | 1 |
| 39765- | 80-5 | trans-Nonachlor | 0.0050 | U | 1 |
| 72-5 | 5-9 | 4,4'-DDE | 0.070 | | 1 |
| 60.5 | 7-1 | - Dieldrin | 0.012 | | IR |
| 72-54 | 4-8 | 4,4'-DDD | 0.010 | U | 1 |
| 5103- | 73-1 | cis-Nonachlor | 0.010 | JN | 1 |
| 50-29 | 9-3 | 4,4'-DDT | 0.010 | U | 1 |
| 36355- | 01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-3 | 35-2 | Toxaphene | 0.20 | U | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40163F

39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor:

1.0

 Lab Sample ID:
 215502

 Date Received:
 09/23/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|--------------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309 00 2 | Aldrin | 0:027 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.028 | | • |
| 5103-74-2 | gamma-Chlordane- | 0.011 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | υ | |
| 72-55-9 | 4,4'-DDE | 0.056 | J | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.012 | | |
| 5103-73-1 | cis-Nonachlor | 0.0080 | JN | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40164F

SDG: 39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215504

 Date Received:
 09/23/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|----|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | l |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | 1 |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309 00 2 | Aldrin | 0.037 | | IR |
| 1024-57-3 | Heptachlor Epoxide | 0.052 | | ` ` |
| 5103-74-2 | gamma-Chlordane | 0.018 | JN | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachior | 0.0050 | υ | } |
| 72-55-9 | 4,4'-DDE | 0.12 | |] |
| 60-57-1 | Dieldrin | 0.010 | U | 1 |
| 72-54-8 | 4,4'-DDD | 0.016 | | 1 |
| 5103-73-1 | cis-Nonachlor | 0.014 | 77 |] |
| 50-29-3 | 4,4'-DDT | 0.010 | U |] |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ú | |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

 Lab Name:
 Aquatec, Inc.
 K40165F

 Lab Code:
 AQUAI

 Contract:
 91082

 Case:
 BIO

 SDG:
 39563

 Lab Sample ID:
 215506

 hase Type:
 Biota
 Date Received:
 09/23/94

Client ID No.

| | | Lau Jailipie IU. | 213300 |
|------------------|---------|------------------|----------|
| Phase Type: | Biota | Date Received: | 09/23/94 |
| Phase Weight: | 10.0 g | Date Extracted: | 04/04/94 |
| Extraction: | Soxhlet | Date Analyzed: | 05/01/94 |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N |
| | | | |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|----|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | 1 |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | 1 |
| 309-00-2 | | 0.035 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.043 | | 1 |
| 5103-74-2 | gamma-Chlordane | 0.016 | NC | |
| 5103-71-9 | alpha-Chiordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | υ | |
| 72-55-9 | 4,4'-DDE | 0.070 | 7 | |
| 60 57 1 | Dieldrin | 0.013 | | 1 R |
| 72-54-8 | 4,4'-DDD | 0.011 | | 1 |
| 5103-73-1 | cis-Nonachlor | 0.015 | | 1 |
| 50-29-3 | 4,4'-DDT | 0.010 | U | 1 |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40166F

SDG: 39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 215508

Date Received: 09/23/94

Date Extracted: 04/04/94

Date Analyzed: 05/01/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309 00 2 | Aldrin | 0.028 | |
| 1024-57-3 | Heptachlor Epoxide | 0.030 | |
| 5103-74-2 | gamma-Chlordane | 0.011 | JN |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachior | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.053 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.012 | |
| 50-29-3 | 4,4'-DDT | 0.010 | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

 Lab Name:
 Aquatec, Inc.
 K40171F

 Lab Code:
 AQUAI
 Contract:
 91082

 Case:
 BIO
 SDG:
 39563

 Lab Sample ID:
 215523

 Prote Received:
 10/07/94

Client ID No.

Phase Type: **Biota** Date Received: 10/07/94 Phase Weight: 10.0 Date Extracted: 04/04/94 Extraction: Soxhlet Date Analyzed: 05/01/94 1.0 **Dilution Factor:** Sulfur Clean-up: Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------------------|--------------------|--------------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309 00 2 | Aldrin | 0.028 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U | |
| - 5103 74 2 | gemma Chlordane | 0:012 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.071 | | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.011 | | |
| 5103-73-1 | cis-Nonachlor | 0.0086 | JN | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

1.0

Dilution Factor:

Client ID No. Lab Name: Aquatec, Inc. K40172F Lab Code: **AQUAI** Contract: 91082 39563 Case: BIO SDG: Lab Sample ID: 215525 Phase Type: Biota **Date Received:** 10/07/94 Phase Weight: 10.0 Date Extracted: 04/04/94 Extraction: Soxhlet 05/01/94

Date Analyzed:

Sulfur Clean-up:

Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|----------------------|--------------------|--------------------------|------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.042 | 20 |
| 1024-57-3 | Heptachlor Epoxide | 0.046 | V 18 |
| 5103-74-2 | gamma-Chlordane | 0.017 | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.082 | |
| 60-57-1 | - Dieldrin - | 0.013 | |
| 72-54-8 | 4,4'-DDD | 0.016 | |
| 5103-73-1 | cis-Nonachlor | 0.012 | NT |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ū |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40173F

39563

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215534

 Date Received:
 10/07/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.045 | JN | |
| 1024-57-3 | Heptachlor Epoxide | 0.050 | | |
| 5103 74 2 | gamma Chlordane | 0.017 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.086 | | |
| 60 57 1 | Dieldrin | 0.015 | | R |
| 72-54-8 | 4,4'-DDD | 0.018 | | |
| 5103-73-1 | cis-Nonachlor | 0.012 | JN | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | ı |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40190F

39563

Phase Type:

Phase Weight:

Extraction:

Dilution Factor:

Biota

10.0 g

Soxhlet

1.0

 Lab Sample ID:
 215487

 Date Received:
 10/08/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/01/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.015 | |
| 1024-57-3 | Heptachlor Epoxide | 0.013 | |
| 5103-74-2 | gamma-Chlordano | 0.0060 | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.067 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | υ |
| 5103-73-1 | cis-Nonachlor | 0.0063 | TW |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40191F

39563

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

 Lab Sample ID:
 215536

 Date Received:
 10/08/94

 Date Extracted:
 04/04/94

 Date Analyzed:
 05/02/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|---|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.016 | | -R |
| 1024-57-3 | Heptachlor Epoxide | 0.016 | | |
| 5103-74-2 | gamma Chlordane | 0.0058 | | R |
| 5103-71-9 | alpha-Chiordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.035 | 7 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0071 | | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | 1 |

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- * Duplicate analysis not within control limits.
- Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Data Validation Checksheets

| | YES | NO | NA |
|--|-----|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | X | | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| Is the distillation log for cyanides present? | | | X |
| Are preparation dates present on sample preparation logs/bench sheets? | X | | |
| Are the measurement read out records present for: | | | - |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | X |
| Mercury | X | | |
| Cyanides | | | X |
| Is the data legible? | X | | |
| Is the data properly labeled? | X | | |
| Holding Times | | | |
| Were mercury analyses performed within 28 days? | X | | |

| | YES | NO | NA |
|---|-------------|-------------|-------------|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | X | | |
| Are correct units indicated on Form I's? | X | | |
| Are all "less than IDL" values properly coded with "U"? | X | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | ··· |
| Calibration | | | |
| Is a record of at least 2 point calibration present for ICP analysis? | | <u></u> | X |
| Is a record of 5 point calibration present for Hg analysis? | X | | |
| Is a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | - | | X |
| Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | X |
| Is correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verifica | tion) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | × | | |
| Cyanides (85-115 %R)? | | | X |

| | YES | NO | NA |
|--|-----|-------------|----|
| Was continuing calibration performed every 10 samples or every 2 hours? | X | | |
| Was the ICV for cyanides distilled? | | | X |
| Form II B (CRDL Standards for AA and ICP) | | - | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis? | | | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | | X | |
| Is mid-range standard within control limits for cyanide (80-120 %R) | | | X |
| Form III (Initial and Continuing Calibration Blanks) | | | _ |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | X | | |
| Are all calibration blanks less than two times instrument Detection Limit (when IDL>CRDL)? | | | X |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | X | | |
| each matrix type? | X | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | × | |

| | YES | NO | NA |
|---|-----|-------------|-------------|
| each matrix type? | X | | |
| Was field blank used for duplicate analysis? | | X | |
| Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | X | | |
| If no, are all results outside the control limits flagged with an * on Form I's and VI? | | | X |
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%? | | X | |
| Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL? | | | X |
| Form VII (Laboratory Control Sample) | | | |
| Was one LCS prepared and analyzed for: | | | |
| each SDG? | X | | |
| each batch samples digested/distilled? | X | | |
| Is LLCS "Found" value higher than the control limits on Form VII? | | X | |
| Is LCS "Found" lower than the control limits on Form VII? | | X | |
| Form IX (ICP Serial Dilution) | | | |
| Was Serial Dilution analysis performed for: | | | |
| each SDG? | | | X |
| each matrix type? | | | X |
| Was field blank(s) used for Serial Dilution Analysis? | | | X |
| Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration of Form IX is equal to 50 times IDL or greater. | | | X |
| Are any % difference values: | | | |
| > 10%? | | | X |
| ≥ 100%? | | | × |
| Furnace Atomic Absorbtion (AA) QC Analysis | | | |
| Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA? | | | X |
| | | | |

Inorganic Data Validation Checklist - Page 6

| | YES | NO | NA |
|--|------|----|-------|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| ls analytical spike recovery outside the control limits (85-115%) for any sample? | | | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | X | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | X |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | X |
| Field Blank | | | |
| Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | X |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | X | | |
| all the instruments used? | X | | |

Inorganic Data Validation Checklist - Page 7

| | YES | NO | NA |
|---|-----|----|----|
| Is IDL greater than CRDL for any analyte? | | X | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than $5 \times IDL$. | | | X |
| Was any sample result higher linear range of ICP. | | | X |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | × | - |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | | | X |

Corrected Sample Analysis Data Sheets

INORGANIC ANALYSES DATA SHEET

| , Name: AQUAT | EC | | Contract: 91 | L082 | K40134F |
|-----------------|-------------|-------------|-----------------|-----------|-----------------|
| | | | | | SDG No.: 39563_ |
| Matrix (soil/wa | | | | - | Le ID: 215477 |
| Level (low/med) | : LOW_ | _ | | Date Rece | eived: 09/18/93 |
| % Solids: | 100. | o | | | |
| Con | centration | Units (ug | /L or mg/kg dry | weight): | MG/KG |
| 1. | | | | | |
| ľ | CAS No. | Analyte | Concentration | C Q | M |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony | | | NR |
| | 7440-38-2 | Arsenic - | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | Beryllium | | - | NR |
| _ I | 7440-43-9 | Cadmium | | | NR |
| | 7440-70-2 | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | 7440-48-4 | Cobalt | | | NR |
| | 7440-50-8 | Copper | | | NR |
| L L | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | | | - | NR |
| | | Magnesium | | -1 | NR |
| | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.17 | - ZN_ | CV |
| | | Nickel - | | - 3-" | NR |
| | 7440-09-7 | | | - | NR |
| | 7782-49-2 | Selenium | | | NR |
| • | 7440-22-4 | | | - | NR |
| ľ | 7440-23-5 | Sodium | | - | NR |
| | 7440-28-0 | Thallium | | - | NR |
| | 7440-62-2 | Vanadium | | - | NR |
| | 7440-66-6 | Zinc | | - | NR |
| | | Cyanide | | | NR |
| 1. | | | | | <u> </u> |
| Color Before: | | Clarit | y Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |
| | | · | | | |
| | | | | · | |
| | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| b Name: AQUA | TEC | | Contract: 91 | .082 | K40139F |
|-----------------|-------------------------|-------------|--|-------------------|-----------------|
| | | | SAS No.: | l | SDG No.: 39563_ |
| Matrix (soil/wa | _ | | | | e ID: 215479 |
| Taval (lau/mad) | · · · · · | _ | | Date Been | eived: 09/18/93 |
| Level (low/med) |): LOW | | | Date Rece | :Iveu. 09/10/93 |
| % Solids: | 100. | 0 | | | |
| Cor | ncentration | Units (ug | /L or mg/kg dry | weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| : | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | Cadmium_ | | | NR |
| | 7440-70-2 | Calcium_ | | | NR NR |
| | 7440-47-3 | | | | NR NR |
| | 7440-48-4 | | | | NR |
| | 7440-50-8 7439-89-6 | Copper | | | NR |
| | | Iron | | | NR |
| | | Magnesium | | - | NR |
| ·. | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.10 | _ <u> </u> | CV |
| | 7440-02-0 | Nickel'- | | | NR |
| | | Potassium | | | NR |
| | | Selenium | | | NR |
| | | Silver | | | NR |
| | | Sodium | | | NR |
| | | Thallium | | - | NR |
| | 7440-62-2 | Vanadium - | - | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | | NR |
| 1 | | | | _ | . <u></u> |
| Color Before: | | Clarit | y Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | ······································ | | |
| | | | | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | INOUGHITC Y | WINDISES DUIT (| JIIDDI | , <u></u> |
|----------------|------------------------|---------------------|-----------------|--------------|-----------------|
| ے Name: AQU | ATEC | • | Contract: 9: | 1082 | K40159F |
| | | | | | SDG No.: 39563_ |
| | - | | | | |
| Matrix (soil/w | water): FISH | | | Lab Samp | le ID: 215494 |
| Level (low/med | i): LOW_ | <u> </u> | | Date Rec | eived: 09/23/93 |
| & Solids: | 100. | 0 | | | |
| | | | | | |
| Co | oncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | | 1 | | | T{ |
| | CAS No. | Analyte | Concentration | C Q | M |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony | | - | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | _ | NR |
| | 7440-41-7 | Beryllium | | - | NR |
| | 7440-43-9 7440-70-2 | Cadmium | | | NR NR |
| | 7440-70-2 | Chromium | | - | NR |
| | 7440-48-4 | Cobalt | | - | NR |
| | 7440-50-8 | Copper | | - | NR |
| | 7439-89-6 | Iron | | - | NR |
| | | Lead | | | NR |
| | | Magnesium | | _ | NR |
| | 7439-96-5 | Manganese | |]_ | NR |
| | 7439-97-6 | Mercury_ | 0.17 | | CV NR |
| | | Nickel Potassium | | - | NR NR |
| | | Selenium | | - | NR |
| | 1 | Silver | | - | NR |
| | 1 | Sodium | | - | NR |
| | 7440-28-0 | Thallium | | | NR |
| | 7440-62-2 | Vanadium_ | | | NR |
| | 7440-66-6 | Zinc | | _ | NR |
| | | Cyanide | | - | NR |
| | l | l | | l _ l | . |
| color Before: | | Clarit | ty Before: | <u> </u> | Texture: |
| olor After: | | Clarit | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | | | | 1 V10160E |
|---------------|------------------------|-----------------------|-----------------|--------------|--|
| Name: AQUA | TEC | | Contract: 9 | 1082 | K40160F |
| ab Code: AQUA | .I_ Ca | se No.: BI | SAS No. | | SDG No.: 39563 |
| atrix (soil/w | vater): FISH | _ | | Lab Samp | le ID: 215496 |
| evel (low/med | l): LOW | | | Date Rece | eived: 09/23/93 |
| Solids: | 100. | | | | |
| • | | | | | |
| Co | ncentration | Units (ug, | /L or mg/kg dry | y weight): | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7420-00-5 | *********** | | | $\left \frac{1}{NR} \right $ |
| | 7429-90-5 7440-36-0 | Aluminum_ Antimony | | - | NR NR |
| | 7440-38-2 | Arsenic | | - | NR |
| | 7440-39-3 | Barium | | - | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | Cadmium | | | NR |
| | 7440-70-2 | | | | NR |
| | 7440-47-3 | Chromium_ | | | NR |
| | 7440-48-4 | Cobalt | | _ | NR |
| | 7440-50-8 | Copper | | _ | NR NR |
| | 7439-89-6 7439-92-1 | Iron | | - | NR NR |
| | 7439-95-4 | Magnesium | | - | NR |
| · | 7439-96-5 | Manganese | | - | NR |
| | 7439-97-6 | Mercury | 0.10 | _ N | CV |
| | 7440-02-0 | Nickel - | | - | NR |
| | 7440-09-7 | Potassium | | | NR |
| | 7782-49-2 | Selenium_ | | | NR |
| | 7440-22-4 | Silver | | | NR |
| | 7440-23-5 | Sodium | | _ | NR |
| | 7440-28-0 | Thallium_ | | _ | NR |
| | 7440-62-2 7440-66-6 | Vanadium_ Zinc | | - | NR NR |
| | 7440-00-0 | Cyanide | | - | NR |
| | | | | | <u> _</u> |
| olor Before: | | Clarit | y Before: | | Texture: |
| olor After: | | Clarit | y After: | | Artifacts: |
| omments: | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| CAS No. | | | INCROMITE A | MINDIOLD DAIR : | | | | |
|---|----------------|--|---|-----------------|-----|----------|---|-------|
| Case No.: BIO | , Name: AQUA | ATEC | | Contract: 91 | 108 | 32 | K40161F | • |
| Date Received: 09/23/93 Solids: 100.0 Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | - | | | SAS No.: | : _ | | SDG No.: 3 | 9563_ |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | Matrix (soil/w | water): FISH | _ | | La | b Sampl | e ID: 21549 | 8 |
| CAS No. | Level (low/med | i): LOW_ | _ | | Da | te Rece | eived: 09/23 | /93 |
| CAS No. | % Solids: | 100. | 0 | | | | | |
| 7429-90-5 | Co | oncentration | Units (ug | /L or mg/kg dry | y w | veight): | MG/KG | |
| 7440-36-0 | | CAS No. | Analyte | Concentration | С | Q | м | |
| color After: Clarity After: Artifacts: | | 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-23-5 7440-28-0 7440-62-2 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc | 0.16 | | | NR NR NR NR NR NR NR NR NR NR NR NR NR N | |
| | Color Before: | | Clari | ty Before: | _ | _ | Texture: | |
| comments: | Color After: | | Clari | ty After: | | _ | Artifacts: | |
| | Comments: | | | | | | | |

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| .b Name: AQUATEC | | Contract: 91 | 1082 | K40162F |
|---------------------------|-----------------------|-----------------|------------|-----------------|
| Lab Code: AQUAI_ Ca | | | | SDG No.: 39563 |
| Matrix (soil/water): FISH | | | | le ID: 215500 |
| Level (low/med): LOW | | | Date Rece | eived: 09/23/93 |
| - · · · · · | | | | |
| % Solids: 100. | | | | |
| Concentration | Units (ug | /L or mg/kg dry | y weight): | : MG/KG |
| CAS No. | Analyte | Concentration | C Q | м |
| 7429-90-5 | Aluminum | | - | NR |
| 7440-36-0 | · - | | | NR |
| 7440-38-2 | Arsenic | | | NR |
| 7440-39-3 | Barium | | - | NR NR |
| 7440-41-7 7440-43-9 | Beryllium Cadmium | | | NR NR |
| 7440-43-9 | Calcium | | - | NR |
| 7440-47-3 | | | - | NR |
| 7440-48-4 | | | | NR |
| 7440-50-8 | Copper | | | NR |
| 7439-89-6 | Iron | | | NR |
| 7439-92-1 | Lead | | | NR |
| 7439-95-4 7439-96-5 | | | - | NR NR |
| 7439-97-6 | Mercury | 0.09 | - NT | CV |
| 7440-02-0 | Nickel | | - | NR |
| 7440-09-7 | Potassium | | | NR |
| 7782-49-2 | Selenium_ | | | NR |
| 7440-22-4 | Silver | | | NR |
| 7440-23-5 | Sodium | | | NR |
| 7440-28-0 7440-62-2 | Thallium_ Vanadium | | - | NR NR |
| 7440-62-2 | Zinc | | - | NR |
| 7440 00 0 | Cyanide | | | NR |
| | | | | |
| Color Before: | Clari | ty Before: | | Texture: |
| Color After: | Clari | ty After: | | Artifacts: |
| Comments: | | | | |
| | | | | |

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| | | Inondmite : | Hamblono Durin C | <i>_</i> | | (|
|----------------|--|--|------------------|----------|---------|--|
| Name: AQUA | TEC | | Contract: 91 | 1082 | 2 | K40163F |
| Lab Code: AQUA | I_ Ca | se No.: BI | SAS No.: | : _ | | SDG No.: 39563_ |
| Matrix (soil/w | rater): FISH | | | Lal | b Sampl | e ID: 215502 |
| Level (low/med | i): LOW_ | _ | | Dat | te Rece | ived: 09/23/93 |
| % Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y we | eight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | m |
| | 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium | | | | NR N |
| Color Before: | 1 | Clarit | y Before: | I_I. | | Texture: |
| Color After: | | | ty After: | | | Artifacts: |
| Comments: | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQUATEC | | Contract: 91 | .082 | K40164F |
|---------------------------|---------------------------------------|-----------------|-----------|-----------------|
| Lab Code: AQUAI_ Ca | | | | SDG No.: 39563_ |
| Matrix (soil/water): FISH | i_ | | Lab Sampl | e ID: 215504 |
| Level (low/med): LOW_ | | | Date Rece | ived: 09/23/93 |
| % Solids: 100. | 0 | | | |
| Concentration | units (ug | /L or mg/kg dry | veight): | MG/KG |
| CAS No. | Analyte | Concentration | C Q | M |
| 7429-90-5 | | | | NR |
| 7440-36-0 7440-38-2 | | | | NR NR |
| 7440-38-2 | | | | NR NR |
| 7440-41-7 | | | | NR |
| 7440-43-9 | Cadmium | | | NR |
| 7440-70-2 | | | | NR |
| 7440-47-3 | | | | NR NR |
| 7440-48-4 7440-50-8 | | | | NR NR |
| 7439-89-6 | | | | NR |
| 7439-92-1 | | | | NR |
| 7439-95-4 | | | | NR |
| 7439-96-5 | | | _! | NR |
| 7439-97-6 7440-02-0 | · · · · · · · · · · · · · · · · · · · | 0.13 | | CV NR |
| 7440-02-0 | | | | NR |
| | | | | NR |
| 7440-22-4 | | | | NR |
| 7440-23-5 | | | | NR |
| 7440-28-0 | | | | NR |
| 7440-62-2 7440-66-6 | Vanadium_ Zinc | | | NR NR |
| 7440-00-0 | Cyanide | | | NR |
| | | | | |
| Color Before: | Clari | ty Before: | | Texture: |
| Color After: | Clari | ty After: | | Artifacts: |
| Comments: | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| o Name: AQUA | TEC | | Contract: 91 | L082 | K40165F |
|----------------|------------------------|--------------|-----------------|---|-----------------|
| Lab Code: AQUA | I Ca | se No.: BI | SAS No.: | . | SDG No.: 39563 |
| Matrix (soil/w | | | | | le ID: 215506 |
| | , | - | | _ | |
| Level (low/med |): LOW_ | - | | Date Rece | eived: 09/23/93 |
| % Solids: | 100. | 0 | | | |
| Con | ncentration | Units (ug | /L or mg/kg dry | y weight): | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aliminim | | - | NR NR |
| | 7440-36-0 | Antimony | | - | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | Cadmium_ | | | NR |
| | 7440-70-2 7440-47-3 | Calcium | | | NR NR |
| | 7440-48-4 | Cobalt | | | NR |
| | 7440-50-8 | Copper | | - | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | | NR |
| *** | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.04 | _ Z _N | CV NR |
| | 7440-02-0 7440-09-7 | Potassium | | | NR |
| | 7782-49-2 | Selenium | | | NR |
| | 7440-22-4 | | | | NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium_ | | | NR |
| | 7440-62-2 | Vanadium_ | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | | NR |
| Color Before: | | Clarit | y Before: | I — I — — — — — — — — — — — — — — — — — | Texture: |
| | | | | | |
| Color After: | | Clarit | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |
| · | | | | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| . Name: Molia | ጥድር | | Contract: 91 | 1081 |) | K40166F |
|---------------|-------------|------------|-----------------|----------|----------|-----------------|
| | | | | | | SDG No.: 39563 |
| | | | | | | |
| trix (soil/w | ater): FISH | | | Lai | o Sampl | le ID: 215508 |
| vel (low/med |): LOW_ | _ | | Dat | te Rece | eived: 09/23/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ua | /L or mg/kg dry | J We | eight): | MG/KG |
| CO . | . ————— | onites (ug | | | | |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - - | | NR |
| | | Antimony | | - - | | NR |
| | | Arsenic - | | - - | | NR |
| | | Barium — | | - - | | NR |
| | | Beryllium | | - - | | NR |
| | | Cadmium | | - - | | NR |
| | | Calcium | | - - | | NR |
| | | Chromium | | - - | | NR |
| | | Cobalt | | - - | | NR |
| | 1 | Copper | | - - | | NR |
| | | Iron | | - - | | NR |
| | | Lead | | - - | | NR |
| | | Magnesium | | - - | | NR |
| | | Manganese | | - - | | NR |
| | | Mercury | 0.07 | - = | N | cv |
| | | Nickel - | | - - | | NR |
| | 1 | Potassium | | - - | | NR |
| | | Selenium | | - - | | NR |
| | | Silver | | - - | | NR |
| | | Sodium | | - - | | NR |
| | | Thallium | | - - | | NR |
| | | Vanadium | : | - - | | NR |
| | 7440-66-6 | Zinc | | - - | | NR |
| İ | | Cyanide_ | | | | NR |
| | | | | | | |
| lor Before: | | Clarit | y Before: | <u> </u> | | Texture: |
| lor After: | | Clarit | y After: | | | Artifacts: |
| mments: | | | | | | |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| .b Name: AQU | ATEC | | Contract: 92 | 108 | 2 | K40171F |
|----------------|--------------|-------------|-----------------|----------|----------|-----------------|
| Lab Code: AOU | AT Ca | se No.: BI | O_ SAS No.: | : | | SDG No.: 39563 |
| Matrix (soil/ | _ | | | | | le ID: 215523 |
| Macrix (SOII) | acer,. ribii | _ | | | .D Cump. | |
| Level (low/med | i): LOW_ | | | Da | te Rec | eived: 10/07/93 |
| % Solids: | 100. | 0 | | | | |
| Co | oncentration | Units (ug | /L or mg/kg dry | y w | eight) | : MG/KG |
| | | | | | | |
| | CAS No. | Analyte | Concentration | c | Q | M |
| | 7429-90-5 | Aluminum | | - | | NR |
| | 7440-36-0 | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic - | | - | | NR |
| | 7440-39-3 | Barium | | - | | NR |
| | 7440-41-7 | Beryllium | | _ | | NR |
| | 7440-43-9 | Cadmium_ | | $ \Box $ | | NR |
| | 7440-70-2 | Calcium_ | | 121 | | NR |
| | 7440-47-3 | Chromium_ | | _ | | NR |
| | 7440-48-4 | Cobalt | | _ | | NR |
| | 7440-50-8 | Copper | | _ | | NR |
| | 7439-89-6 | Iron | | _ | | NR |
| | 7439-92-1 | Lead | | _ | | NR |
| | 7439-95-4 | Magnesium | | _ | | NR |
| | 7439-96-5 | Manganese | | 1-1 | | NR |
| | 7439-97-6 | Mercury | 0.17 | _ | <u></u> | CV |
| | 7440-02-0 | Nickel | | _ | | NR |
| | 7440-09-7 | Potassium | | _ | | NR |
| | 7782-49-2 | Selenium_ | | l_l | | NR |
| | 7440-22-4 | Silver | | _ | | NR |
| | 7440-23-5 | Sodium | | _ | | NR |
| | 7440-28-0 | Thallium_ | | _ | | NR |
| | 7440-62-2 | Vanadium_ | | 1-1 | | NR |
| | 7440-66-6 | Zinc | | 1-1 | | NR |
| | | Cyanide | | - | | NR |
| Color Before: | | Clarit | ty Before: | | | Texture: |
| Color After: | | Clarit | ty After: | | _ | Artifacts: |
| Comments: | | | | | | ····· |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ی Name: AQUA | TEC | | Contract: 91 | 1082 | K40172F |
|----------------|--|---|-----------------|------------|---|
| | | | | | SDG No.: 39563_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Samp | le ID: 215525 |
| Level (low/med |): LOW_ | _ | | Date Rece | eived: 10/07/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-92-1 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-28-0 | Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel Potassium Selenium_ Silver_ Sodium_ Thallium Vanadium_ Zinc Cyanide_ | 0.09 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before: | | Clarit | y Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| o Name: AQUA | ATEC | | Contract: 91 | L082 | K40173F |
|---------------|--|------------------------|-----------------|--|--------------------|
| ab Code: AQU | AI Ca | se No.: BI | O SAS No.: | | SDG No.: 39563 |
| atrix (soil/v | _ water): FISH | _ | | Lab Sam | ple ID: 215534 |
| evel (low/med | i): LOW_ | _ | | Date Re | ceived: 10/07/93 |
| Solids: | 100. | 0 | | | |
| | | | /L or mg/kg dry | y weight | :): MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | | | - | NR |
| | | Antimony_ | | _ | NR |
| | | Arsenic Barium | | - | NR NR |
| | | Beryllium | | | - NR |
| | | Cadmium | | | NR |
| | | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | | Cobalt | | | NR |
| | | Copper | | | NR |
| | | Iron | _ | _ | NR |
| | | Lead | | | NR NR |
| | | Magnesium Manganese | | | $- \frac{NR}{NR} $ |
| | | Mercury | 0.11 | _N_ | - cv |
| | | Nickel - | | | NR |
| | | Potassium | | | NR |
| | | Selenium_ | | | NR |
| | | Silver | | | NR |
| | | Sodium | | | NR |
| | | Thallium_ Vanadium | | - | NR NR |
| | 7440-62-2 | Zinc | | - | - NR |
| | 1,440 00 0 | Cyanide | | - | NR |
| | | | | | |
| lor Before: | - The second sec | Clari | ty Before: | <u>. </u> | Texture: |
| lor After: | | Clarit | ty After: | | Artifacts: |
| mments: | | | | | |
| | | | | | |

INORGANIC ANALYSES DATA SHEET EPA SAMPLE NO.

| Cas No. | | | | | | |
|--|----------------|--|--------------|----------------|---------------|-----------------|
| Case No.: BIO | ی Name: AQUA | TEC | | Contract: 91 | L082 | K40190F |
| Date Received: 10/08/93 Solids: 100.0 Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | | | | | | SDG No.: 39563_ |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | Matrix (soil/w | ater): FISH | _ | | Lab Sampl | e ID: 215487 |
| Cas No. | Level (low/med | l): LOW_ | - | | Date Rece | ived: 10/08/93 |
| CAS No. | % Solids: | 100. | 0 | | | |
| T429-90-5 | Co | ncentration | Units (ug, | L or mg/kg dry | y weight): | MG/KG |
| 7440-36-0 | | CAS No. | Analyte | Concentration | C Q | м |
| 7440-36-0 | | 7429-90-5 | Aliminim | | - | NR |
| 7440-38-2 | | | | | - | |
| 7440-41-7 | | 7440-38-2 | Arsenic | | | |
| 7440-43-9 Cadmium | | | | | | |
| 7440-70-2 | | The state of the s | | | | |
| 7440-47-3 | | | | | | |
| 7440-48-4 | | | · | | | |
| 7440-50-8 | | | | | | |
| 7439-89-6 | | | | | | |
| 7439-95-4 Magnesium | | 7439-89-6 | Iron | | | |
| 7439-96-5 | | | | | | |
| 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 Color Before: Color After: Color Mercury O.09 NR O.09 NR NR NR NR NR NR NR NR NR N | | | | | | |
| 7440-02-0 | | | | - 0.00 | - | |
| 7440-09-7 | | | | 0.09 | - -\ <u>-</u> | |
| 7782-49-2 | | 7440-02-0 | Potassium | | - | |
| 7440-23-5 | | 7782-49-2 | Selenium | | - | |
| 7440-23-5 | | 7440-22-4 | Silver | | - | |
| 7440-62-2 Vanadium | | 7440-23-5 | Sodium | | | |
| 7440-66-6 | | | | | | |
| Cyanide NR Color Before: Clarity Before: Texture: Color After: Clarity After: Artifacts: | | | | | | |
| Color Before: Clarity Before: Texture: Color After: Clarity After: Artifacts: | | 7440-66-6 | | | | |
| Color After: Artifacts: | | | Cyanitae | | | |
| | Color Before: | | Clarit | y Before: | | Texture: |
| Comments: | Color After: | | Clarit | ty After: | | Artifacts: |
| | Comments: | | | | | |

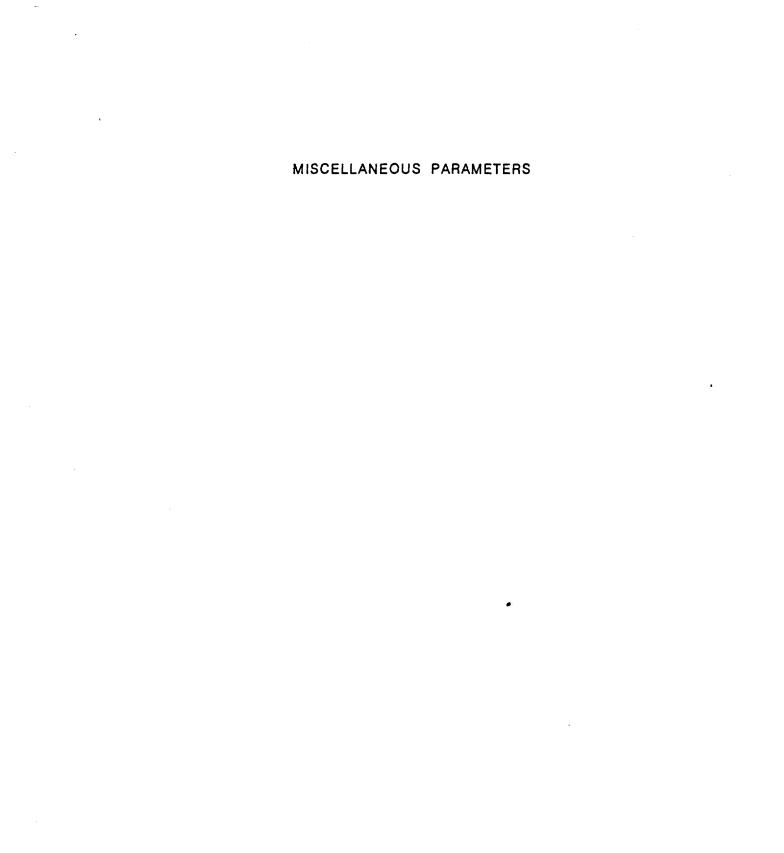
FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| _ab Name: AQUA | TEC | | Contract: 91 | L082 | K40191F |
|----------------|-------------|-----------------------|-----------------|---------------------|-----------------|
| Lab Code: AQUA | I Ca | se No.: BI | SAS No.: | · | SDG No.: 39563_ |
| Matrix (soil/w | _ | | | | le ID: 215536 |
| T 7 / / 3 / 3 |) - TOM | | | Data Bas | eived: 10/08/93 |
| Level (low/med |): LOW_ | - | | Date Reci | erved: 10/08/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | weight) | : MG/KG |
| | · · | | | | · |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | | Beryllium | | | NR |
| | 7440-43-9 | Cadmium_ | | | NR |
| | 7440-70-2 | Calcium | | | NR |
| | | Chromium_ | | _ | NR NR |
| | I | Cobalt | | _ | NR |
| | I. | Copper | | _ | NR |
| | 7439-89-6 | Iron | | | NR |
| | | Lead | | | NR |
| | 7439-95-4 | Magnesium | | | NR |
| | | Manganese | | - | NR |
| | | Mercury | 0.04 | N | CV |
| | T | Nickel | | | NR |
| | | Potassium | | | NR |
| | | Selenium_ | | | NR NR |
| | | Silver | | | NR |
| | | Sodium | | | NR |
| | | Thallium_ Vanadium | | - | NR NR |
| | | Zinc | | - | NR NR |
| | 7440-66-6 | Cyanide | | - | NR NR |
| | | Cyanitde | | · | I I I |
| | · | | | | ·—· |
| Color Before: | | Clarit | y Before: | l. | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |
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| | | | . | | |
| | | | | | |

FORM I - IN



MISCELLANEOUS PARAMETERS

| | | | | % I | _ipids |
|-----------|------------------|--------|------------------|--------|----------------------|
| Sample ID | Description | Sex | Fillet Weight | Fillet | Remaining Carcass |
| K40134 | Small Mouth Bass | male | 320g | 2.37 | 5.62 |
| K40139 | Small Mouth Bass | male | 171g | 3.27 | 8.78 |
| K40159 | Small Mouth Bass | female | 513g | 2.65 | 10.6 |
| K40160 | Small Mouth Bass | female | 283g | 0.87 | 2.40 |
| K40161 | Small Mouth Bass | female | 441g | 1.59 | 4.10 |
| K40162 | Small Mouth Bass | male | 274g | 1.71 | 5.20 |
| K40163 | Small Mouth Bass | female | 249g | 0.93 | 4.80 |
| K40164 | Small Mouth Bass | male | 212g | 1.93 | 4.90 |
| K40165 | Small Mouth Bass | male | 191g | 2.68 | 5.60 |
| K40166 | Small Mouth Bass | female | 183g | 1.69 | 10.5 |
| K40171 | Small Mouth Bass | female | 348g | 1.19 | 4.88 |
| K40172 | Small Mouth Bass | female | 305g | 2.20 | 4.70 |
| K40173 | Small Mouth Bass | female | 213g | 2.00 | 6.80 |
| K40190 | Small Mouth Bass | male | 92g | 0.92 | 3.36 |
| K40191 | Small Mouth Bass | male | 112g | 1.11 | 6.43 |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39566

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39566 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

| Sample ID | nple ID Lab ID Species Description Sample | | 1977 A. S. /li> | Analysis | | |
|-----------|---|--------------|---|----------------|-----------------|----------------|
| | | | | Location | Pest/PCB/ Hg | % lípid |
| K40141W | 197869 | White Sucker | whole body | Lake Allegan | x | × |
| K40142W | 197870 | White Sucker | whole body | Lake Allegan | × | × |
| K40143W | 197871 | White Sucker | whole body | Lake Allegan | × | x |
| K40144W | 197872 | White Sucker | whole body | Lake Allegan | x | × |
| K40145W | 197873 | White Sucker | whole body | Lake Allegan | x | × |
| K40146W | 197874 | White Sucker | whole body | Lake Allegan | × | x |
| K40147W | 197875 | White Sucker | whole body | Lake Allegan | x | x |
| K40148W | 197876 | White Sucker | whole body | Lake Allegan | × | × |
| K40149W | 197877 | White Sucker | whole body | Lake Allegan | x | × |
| K40150W | 197878 | White Sucker | whole body | Lake Allegan | x | × |
| K40151W | 197879 | White Sucker | whole body | Lake Allegan | x | x |
| K40202W* | 200182 | White Sucker | whole body | Near Saugatuck | x | × |
| K40203W | 200183 | White Sucker | whole body | Near Saugatuck | × | × |
| K40204W | 200184 | White Sucker | whole body | Near Saugatuck | x | × |
| K40205W | 200185 | White Sucker | whole body | Near Saugatuck | x | x |
| K40206W | 200186 | White Sucker | whole body | Near Saugatuck | × | × |
| K40207W | 200187 | White Sucker | whole body | Near Saugatuck | × | × |
| K40208W | 200188 | White Sucker | whole body | Near Saugatuck | × | x |
| K40209W | 200189 | White Sucker | whole body | Near Saugatuck | x | х |
| K40210W | 200190 | White Sucker | whole body | Near Saugatuck | x | x |

MS/MSD/DUP performed on sample



Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for nonlinearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

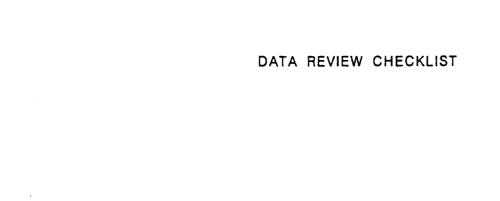
7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike recoveries and relative percent differences (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within specified control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA_ |
|--|-----|-------------|-----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | × | | |
| How many spike recoveries were outside of QC limits? | | | |
| 0 out of8 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | _ | | |
| | • | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | × | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-----|-------------|-------------|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Arocior 1254 | X | | |
| Instrument Blanks | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | × | | |
| Are %D values for all compounds within limits (less than 15%)? | × | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|------|---------------|-------|
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | x | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Lis | mits | - | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | . — . |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | × | |
| Field Duplicates | | _ | |
| Where field duplicates submitted with the samples? | | X | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates - | Column 2 |
|------------|------------|--------------|------------|--------------|----------|
| Sample 10 | Time | тсх | DCB | тсх | DCB |
| K40141W | OK for all | ok | ok | ok | ok |
| K40142W | samples | | | | |
| K40143W | | | | | |
| K40144W | | | | | |
| K40145W | | | | | |
| K40146W | | | | | |
| K40147W | | | | | |
| K40148W | | | | | |
| K40149W | | | | | : |
| K40150W | | | | | |
| K40151W | | - | | | |
| K40202W | | | | | |
| K40202WMS | | | | | |
| K40202WMSD | | | | | |
| K40203W | | | | | - |
| K40204W | | | | | |
| K40205W | | | · | | |
| K40206W | | | | | |
| K40207W | | | | | |
| K40208W | | | | | |
| K40209W | | | | | |
| K40210W | | | | | |

TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP2087 Column: RTX-35 / RTX-5

| Date: | 5/8/94 2109 | 5/12 | 5/12 | 5/13 | 5/13 | 5/13 | 5/13 |
|----------------------|-------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | to 5/9/94 1730 | 1728 | 1804 | 0115 | 0151 | 0903 | 0939 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | % D | % D | %D | % D |
| Aroclor 1016 | 5.0 / 4.7 | | | | 7.0 | ļ. <u></u> | |
| Aroclor 1221 | 3.8 / 2.8 | | | | | | |
| Aroclor 1232 | 3.0 / 2.7 | | | | | | |
| Aroclor 1242 | 3.7 / 2.9 | | | | | | 14.5 |
| Aroclor 1248 | 3.6 / 3.1 | 7.0 | | 14.5 | | 14.5 | |
| Aroclor 1254 | 9.3 / 8.9 | | | | | | |
| Aroclor 1260 | 3.0 / 3.0 | | 2.0 | | | | |
| Tetrachloro-m-xylene | 4.9 / 3.1 | | | | | | |
| Decachlorobiphenyl | 8.1 / 11.8 | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP2087</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 5/19/94 1800 | 5/20 | 5/20 | 5/20 | 5/20 | | La Marjaka |
|----------------------|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | to 5/19/94 1254 | 0848 | 0922 | 2236 | 2310 | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D |
| Aroclor 1016 | 3.9 / 4.3 | | | | 11.5 | | |
| Aroclor 1221 | 4.6 / 5.5 | | | | | | |
| Arocior 1232 | 2.9 / 3.2 | | | | | | |
| Aroclor 1242 | 3.6 / 3.3 | | | | | | |
| Aracior 1248 | 3.1 / 3.0 | 3.0 | | 2.5 | | | |
| Araciar 1254 | 3.0 / 3.0 | | | | | | |
| Aroclor 1260 | 3.2 / 2.3 | | 4.0 | | | | |
| Tetrachloro-m-xylene | 7.7 / 5.0 | | | | | | |
| Decachlorobiphenyl | 7.2 / 8.8 | | | | | · | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP2087</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 5/25/94 1240 | 5/26 | 5/26 | 5/26 | 5/26 | | |
|----------------------|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | to 5/26/94 0735 | 1559 | 1632 | 2314 | 2348 | | |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | %D | %D | % D | %D | %D |
| Aroclor 1016 | 4.7 / 4.1 | | | | | | |
| Aroclor 1221 | 5.3 / 4.5 | | | | | | |
| Aroclor 1232 | 3.0 / 2.8 | | | | | | |
| Aroclor 1242 | 3.3 / 2.6 | | 0.0 | | | l | |
| Arocior 1248 | 3.7 / 3.4 | 1.0 | | 14.5 | | | |
| Aroclor 1254 | 5.3 / 4.5 | | | | 14.5 | | |
| Arocior 1260 | 3.5 / 3.5 | | | | | | |
| Tetrachioro-m-xylene | 8.4 / 6.3 | | | | | <u> </u> | |
| Decachlorobiphenyl | 6.0 / 10.1 | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 4

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| 6/1 | 6/1 |
|---------------|---------------|
| 2143 | 2216 |
| Cont. Cal. | Cont. Cal. |
| %D | %D |
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| 3.5 | |
| <u> </u> | 1.5 |
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PCB Calibration Summary - Page 5

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 6/2 | 6/2 | 6/2 | 6/2 | | |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 0455 | 0529 | 0922 | 0955 | | |
| , | Initial Cat. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | %D | % D | % D | % D | % D |
| Araclor 1016 | | | | | 7.0 | | |
| Aroclor 1221 | | | | | | | |
| Aroclor 1232 | | | | | | | |
| Aroclor 1242 | | | | | | | |
| Aroclor 1248 | | 4.5 | | 4.5 | | | |
| Araclor 1254 | | | | | · | | |
| Aroclor 1260 | | | 2.5 | | | | |
| Tetrachloro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

Lab Name:

Contract:

Phase Type: _

Phase Weight:

Injection Volume:

Dilution Factor:

Aquatec, Inc.

91082

BIOTA

10.0

1.0

1.0

EPA SAMPLE NO. K40141W Lab Code: **IAUDA** SDG: __ 39566 Case: BIO Lab Sample ID: 197869 Date Received: 09/18/93 (g) (uL) **Date Extracted:** 04/13/94

Date Analyzed: 05/12/94
Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.15 | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.36 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO.

K40142W Lab Code: Lab Name: Aquatec, Inc. AQUAI 91082 SDG: 39566 Contract: Case: BIO Phase Type: **BIOTA** Lab Sample ID: 197870 Phase Weight: 10.0 **(g)** Date Received: 09/18/93 Injection Volume: 1.0 (uL) Date Extracted: 04/13/94 Dilution Factor: 1.0 05/12/94 Date Analyzed: Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.23 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.59 | |
| 11096-82-5 | Arocior-1260 | 0.10 | |

EPA SAMPLE NO. K40143W Lab Name: Aquatec, Inc. Lab Code: IAUDA 39566 91082 Case: _ BIO SDG: Contract: Phase Type: **BIOTA** 197871 Lab Sample ID: Phase Weight: 10.0 Date Received: 09/18/93 (g) Injection Volume: 1.0 Date Extracted: 04/13/94 (uL) Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u> </u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.60 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | Ų |
| 11097-69-1 | Arocior-1254 | 0.70 | |
| 11096-82-5 | Aroclor-1260 | 0.11 | |

EPA SAMPLE NO.

K40144W

Lab Name: Aquatec, Inc. Lab Code: AQUAI SDG: ____ Contract: 91082 Case: __ BIO 39566

Lab Sample ID: 197872 Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: 09/18/93 **(g)** Injection Volume: _ 1.0 (uL) Date Extracted: 04/13/94 Dilution Factor: 1.0 Date Analyzed: 05/12/94

Sulfur Clean-up: (Y/N)N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Ω |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.21 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.39 | |
| 11096-82-5 | Aroclor-1260 | 0.062 | |

EPA SAMPLE NO.

 Lab Name:
 Aquatec, Inc.
 Lab Code:
 AQUAI

 Contract:
 91082
 Case:
 BIO
 SDG:
 39566

 Phase Type:
 BIOTA
 Lab Sample ID:
 197873

 Phase Weight:
 10.0
 (g)
 Date Received:
 09/18/93

 Injection Volume:
 1.0
 (uL)
 Date Extracted:
 04/13/94

 Dilution Factor:
 1.0
 Date Analyzed:
 05/12/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | ι |
| 53469-21-9 | Aroclor-1242 | 0.15 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | ι |
| 11097-69-1 | Arocior-1254 | 0.31 | |
| 11096-82-5 | Aroclor-1260 | 0.091 | |

EPA SAMPLE NO. K40146W Lab Name: Aquatec, Inc. Lab Code: **IAUDA** 91082 BIO 39566 Contract: Case: SDG: Lab Sample ID: Phase Type: __ **BIOTA** 197874 Date Received: Phase Weight: 10.0 09/18/93 **(g)** Injection Volume: _ 1.0 (uL) Date Extracted: 04/13/94 Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.20 | _ |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | l |
| 11097-69-1 | Aroclor-1254 | 0.66 | |
| 11096-82-5 | Aroclor-1260 | 0.056 | |

EPA SAMPLE NO.

 Lab Name:
 Aquatec, Inc.
 Lab Code:
 AQUAI

 Contract:
 91082
 Case:
 BIO
 SDG:
 39566

Phase Type: Lab Sample ID: 197875 **BIOTA** 10.0 Phase Weight: (g) **Date Received:** 09/18/93 Injection Volume: 1.0 (uL) Date Extracted: 04/13/94 Dilution Factor: 1.0 Date Analyzed: 05/13/94 (Y/N) Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Arocior-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.53 | |
| 11096-82-5 | Aroclor-1260 | 0.063 | |

EPA SAMPLE NO.

K40148W

Lab Code: AQUAI

Case: BIO SDG: 39566

Lab Sample ID: 197876

Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: 09/18/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/13/94 Dilution Factor: 2.0 Date Analyzed: 05/20/94

Lab Name: Aquatec, Inc.

91082

Contract:

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | υ |
| 11104-28-2 | Aroclor-1221 | 0.10 | ٦ |
| 11141-16-5 | Aroclor-1232 | 0.10 | J |
| 53469-21-9 | Aroclor-1242 | 0.10 | ٦ |
| 12672-29-6 | Aroclor-1248 | 1.1 | |
| 11097-69-1 | Aroclor-1254 | 0.60 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | U |

EPA SAMPLE NO. K40149W Lab Name: Aquatec, Inc. Lab Code: IAUDA 91082 SDG: 39566 Contract: Case: BIO Phase Type: Lab Sample ID: **BIOTA** 197877 Phase Weight: 10.0 Date Received: 09/18/93 (g) Injection Volume: Date Extracted: 1.0 (uL) 04/13/94 Dilution Factor: ___ 1.0 Date Analyzed: 05/13/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.21 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.32 | |
| 11096-82-5 | Aroclor-1260 | 0.072 | |

EPA SAMPLE NO. K40150W Lab Name: Aquatec, Inc. Lab Code: AQUAI 39566 Contract: ____ 91082 Case: _ BIO SDG: Phase Type: **BIOTA** Lab Sample ID: 197878 10.0 Phase Weight: Date Received: 09/18/93 (g) Injection Volume: 1.0 Date Extracted: 04/13/94 (uL) Dilution Factor: 1.0 Date Analyzed: 05/13/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.18 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.34 | |
| 11096-82-5 | Aroclor-1260 | 0.032 | J |

Dilution Factor:

1.0

EPA SAMPLE NO. K40151W Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 39566 Case: BIO SDG: Phase Type: **BIOTA** Lab Sample ID: 197879 Phase Weight: 10.0 (g) Date Received: 09/18/93 Injection Volume: 1.0 (uL) Date Extracted: 04/13/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | · |
| 11104-28-2 | Aroclor-1221 | 0.050 | <u>U</u> |
| 11141-16-5 | Aroclor-1232 | 0.050 | ί |
| 53469-21-9 | Aroclor-1242 | 0.13 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | ι |
| 11097-69-1 | Aroclor-1254 | 0.34 | |
| 11096-82-5 | Aroclor-1260 | 0.085 | |

Date Analyzed:

Sulfur Clean-up:

05/13/94

(Y/N)

EPA SAMPLE NO. K40202W Lab Code: AQUAI Lab Name: Aquatec, Inc. 39566 Contract: 91082 Case: BIO SDG: Phase Type: ___ **BIOTA** Lab Sample ID: 200182 Phase Weight: 3.0 Date Received: 10/09/93 (g) Injection Volume: __ 1.0 (uL) Date Extracted: 05/23/94 Dilution Factor: 1.0 05/26/94 Date Analyzed: Sulfur Clean-up: Υ (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.17 | υ |
| 11104-28-2 | Aroclor-1221 | 0.17 | U |
| 11141-16-5 | Aroclor-1232 | 0.17 | U |
| 53469-21-9 | Aroclor-1242 | 0.81 | |
| 12672-29-6 | Aroclor-1248 | 0.17 | U |
| 11097-69-1 | Aroclor-1254 | 0.80 | |
| 11096-82-5 | Aroclor-1260 | 0.17 | U |

EPA SAMPLE NO.

K40203W

Lab Code: Lab Name: Aquatec, Inc. **AQUAI** BIO SDG: 39566 Contract: 91082 Case:

Phase Type: **BIOTA** Lab Sample ID: 200183 Phase Weight: 10.0 Date Received: 10/09/93 **(g)** 05/24/94 Injection Volume: 1.0 (uL) Date Extracted: Dilution Factor: _ 1.0 Date Analyzed: 06/01/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | (|
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | Į |
| 11104-28-2 | Aroclor-1221 | 0.050 | į |
| 11141-16-5 | Aroclor-1232 | 0.050 | 1 |
| 53469-21-9 | Aroclor-1242 | 0.050 | |
| 12672-29-6 | Arocior-1248 | 0.53 | |
| 11097-69-1 | Aroclor-1254 | 0.37 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | |

EPA SAMPLE NO. K40204W Lab Code: AQUAI Lab Name: Aquatec, Inc. Contract: 91082 BIO SDG: _ 39566 Case: Phase Type: **BIOTA** Lab Sample ID: 200184 Phase Weight: 10.4 (g) Date Received: 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: 1.0 Date Analyzed: 06/01/94

| CAS NO. | COMPOUND CONCENTRAT (mg/Kg) | | ٥ |
|------------|-----------------------------|-------|---|
| 12674-11-2 | Aroclor-1016 | 0.048 | U |
| 11104-28-2 | Aroclor-1221 | 0.048 | U |
| 11141-16-5 | Aroclor-1232 | 0.048 | U |
| 53469-21-9 | Aroclor-1242 | 0.048 | U |
| 12672-29-6 | Aroclor-1248 | 0.74 | |
| 11097-69-1 | Aroclor-1254 | 0.37 | |
| 11096-82-5 | Arocior-1260 | 0.048 | U |

Sulfur Clean-up:

(Y/N)

EPA SAMPLE NO.

K40205W Lab Name: Aquatec, Inc. Lab Code: _ AQUAI Contract: 91082 Case: BIO SDG: 39566 Lab Sample ID: _ **BIOTA** 200185 Phase Type: Date Received: 10.3 Phase Weight: (g) 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: 2.0 Date Analyzed: 06/02/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.097 | u |
| 11104-28-2 | Aroclor-1221 | 0.097 | U |
| 11141-16-5 | Aroclor-1232 | 0.097 | U |
| 53469-21-9 | Aroclor-1242 | 0.097 | U |
| 12672-29-6 | Aroclor-1248 | 0.62 | |
| 11097-69-1 | Aroclor-1254 | 0.33 | |
| 11096-82-5 | Aroclor-1260 | 0.097 | l |

EPA SAMPLE NO.

K40206W

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39566

Phase Type: **BIOTA** 200186 Lab Sample ID: Phase Weight: 10.2 Date Received: (g) 10/09/93 Injection Volume: __ 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: _ 1.0 Date Analyzed: 06/01/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.049 | U |
| 11104-28-2 | Aroclor-1221 | 0.049 | U |
| 11141-16-5 | Aroclor-1232 | 0.049 | U |
| 53469-21-9 | Aroclor-1242 | 0.049 | U |
| 12672-29-6 | Aroclor-1248 | 0.47 | |
| 11097-69-1 | Aroclor-1254 | 0.44 | |
| 11096-82-5 | Aroclor-1260 | 0.049 | U |

EPA SAMPLE NO.

K40207W Lab Name: Aquatec, Inc. Lab Code: **AQUAI** 39566 Contract: 91082 Case: BIO SDG: Phase Type: **BIOTA** Lab Sample ID: 200187 10.3 Phase Weight: **(g)** Date Received: 10/09/93 Injection Volume: _ 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: _ 1.0 Date Analyzed: 06/01/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|-----------------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.049 | U |
| 11104-28-2 | Aroclor-1221 | 0.049 | Ų |
| 11141-16-5 | Aroclor-1232 | 0.049 | į |
| 53469-21-9 | Aroclor-1242 | 0.049 | Ū |
| 12672-29-6 | Aroclor-1248 | 0.59 | |
| 11097-69-1 | 097-69-1 Aroclor-1254 | 0.46 | |
| 11096-82-5 | Aroclor-1260 | 0.049 | ι |

Lab Name: Aquatec, Inc.

Contract:

91082

EPA SAMPLE NO. K40208W SDG: ____ 39566

(Y/N)

Phase Type: **BIOTA** Lab Sample ID: 200188 Phase Weight: 10.0 (g) Date Received: 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 05/24/94 2.0 Dilution Factor: Date Analyzed: 06/02/94 Sulfur Clean-up: Ν

Lab Code: ___

Case:

AQUAI

BIO

CAS NO. **COMPOUND** CONCENTRATION Q (mg/Kg) 12674-11-2 Aroclor-1016 0.10 U 11104-28-2 Aroclor-1221 U 0.10 Aroclor-1232 U 11141-16-5 0.10 53469-21-9 Aroclor-1242 0.10 U 12672-29-6 Aroclor-1248 0.49 0.29 11097-69-1 Aroclor-1254 11096-82-5 Aroclor-1260 0.10 U

EPA SAMPLE NO. K40209W Lab Code: **AQUAI** Lab Name: Aquatec, Inc. 91082 Case: BIO SDG: 39566 Contract: Phase Type: **BIOTA** Lab Sample ID: 200189 10.0 Phase Weight: (g) Date Received: 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: __ 1.0 Date Analyzed: 06/01/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND CONCENTRATIO | | 0 |
|------------|-----------------------|-------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.62 | |
| 11097-69-1 | Aroclor-1254 | 0.58 | _ |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO.

K40210W Lab Name: Aguatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO SDG: 39566 200190 Phase Type: __ **BIOTA** Lab Sample ID: 10.0 **Date Received:** 10/09/93 Phase Weight: (g) Injection Volume: _ 1.0 (uL) Date Extracted: 05/24/94 Dilution Factor: __ 1.0 06/01/94 Date Analyzed: Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | l |
| 12672-29-6 | Aroclor-1248 | 0.53 | |
| 11097-69-1 | Aroclor-1254 | 0.50 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | l |

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit with the following exceptions:

Instrument HP2404, RTX-5 - 5/14/94 00:50

2-Bromobiphenyl

All data in the associated samples K40141W, K40142W, K40143W, K40144W, K40145W, K40146W, K40147W, K40148W, K40149W, K40150W and K40151W

30.2%

have been qualified as estimated.

Instrument HP2404, RTX-5 - 5/14/94 09:10

2-Bromobiphenyl

25.5%

All data in the associated samples K40143W, K40144W, K40145W, K40146W, K40147W, K40148W, K40149W, K40150W and K40151W have been qualified as estimated.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40141W | Aldrin 4,4'-DDE 4,4'-DDT | 80.0% 33.3% 324.2% |
|---------|---|------------------------------------|
| K40142W | Aldrin Heptachlor Epoxide gamma-Chlordane 4,4'-DDE | 100.0% 52.9% 145.3% 26.9% |
| K40143W | Aldrin Heptachlor Epoxide gamma-Chlordane | 86.4% 151.9% 82.8% |
| K40144W | Aldrin Heptachlor Epoxide 4,4'-DDE | 93.2% 154.5% 33.3% |
| K40145W | Aldrin Heptachlor Epoxide | 70.5% 56.6% |
| K40146W | Aldrin Heptachlor Epoxide gamma-Chordane | 90.9% 333.3% 86.0% |

| K40147W | Aldrin Heptachlor Epoxide 4,4-DDE | 63.6% 93.5% 31.3% |
|---------|--|---------------------------|
| K40148W | Aldrin Heptachlor Epoxide | 86.4% 109.7% |
| K40149W | Aldrin Heptachlor Epoxide 4,4'-DDE | 83.3% 476.5% 26.3% |
| P40150W | Aldrin Heptachlor Epoxide | 69.2% 220.0% |
| K40151W | Aldrin Heptachlor Epoxide | 77.1% 763.6% |
| K40202W | Aldrin Heptachlor Epoxide 4,4'-DDE | 34.4% 3654.8% 31.3% |
| K40203W | Aldrin gamma-Chlordane 4,4'-DDE | 79.2% 156.6% 31.0% |
| K40204W | Aldrin gamma-Chlordane | 85.2% 144.6% |
| K40205W | Aldrin gamma-Chlordane | 93.1% 110.1% |
| K40206W | Aldrin gamma-Chlordane | 82.1% 149.1% |
| K40207W | Aldrin gamma-Chlordane 4,4'-DDE | 73.4% 157.4% 34.8% |
| K40208W | Aldrin gamma-Chlordane 4,4'-DDE | 78.0% 146.7% 26.3% |
| K40209W | Aldrin gamma-Chlordane | 93.1% 110.1% |
| K40210W | Aldrin gamma-Chlordane | 90.1% 148.4% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin, Dieldrin and 4,4'-DDT were high in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers have been added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

| | YES | NO | NA |
|--|----------|---------|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | <u> </u> | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | <u> </u> | | |
| Are all the samples listed on the appropriate surrogate recovery form? | <u> </u> | | |
| Are the outliers correctly marked with an asterisk? | | <u></u> | X |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | | X | |
| If yes, were the samples reanalyzed? | | | X |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| <u>6</u> out of <u>8</u> | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| Is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | × | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | × | | |
| | | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|------------|-------------|-------|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any trip/field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | × | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts presblanks, and MS/MSD? | sent for a | all samples | 1 |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | | |
| Toxaphene multipoint calibration | X | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | X | | |
| is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | X | | - |
| Is Form VII-1 present for each BCS analyzed for both columns? | X | <u></u> | ***** |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | X | | |
| Is Form VII-2 present and complete for each mid-point standard analyzed? | X | | |
| Are RPD values for all compounds < 25%? | X | | |
| Analytical Sequence Check | | | |
| is Form VIII present and complete for each column and each period of analyses? | x | | |
| | | | |

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA |
|---|----------|----|-------------|
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | X | | |
| Are all samples listed on the form? | X | | |
| If GPC cleanup was performed, is Form IX-2 present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | X | | |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| ls a Form X present for every sample in which a pesticide or PCB was detected? | <u> </u> | | |
| Was GC/MS confirmation provided when required? | | | X |
| Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | × | |
| Were there any false negatives? | | X | |
| Compound Quantitation and Reported Detection Limit | ts | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | • |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates - Column 2 | | |
|------------|------------|------------|------------|-----------------------|-----|--|
| | Time | TCX | DCB | тсх | DCB | |
| K40141W | OK for all | ok | ok | ok | okk | |
| K40142W | samples | | | | · | |
| K40143W | | | | | | |
| K40144W | | | | | | |
| K40145W | | | | | | |
| K40136W | | | | | | |
| K40147W | | | | | • | |
| K40148W | | | | | | |
| K40149W | | | | | | |
| K40150W | | | | | | |
| K40151W | | | | | | |
| K40202W | | | | | | |
| K40202WMS | | | | | | |
| K40202WMSD | | | | | | |
| K40203W | | | | | | |
| K40204W | | | | | | |
| K40205W | | | | | | |
| K40206W | | | | | | |
| K40207W | | | | | | |
| K40208W | | | | | | |
| K40209W | | | | | | |
| K40210W | | | | | | |

TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Surrogate diluted out D

Recovery high Recovery low t

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 5/12/94 | 5/13 | 5/14 | 5/14 | | |
|-----------------------------|-----------------|------------|------------|------------|------------|------------|
| Time: | 17:54 | 16:30 | 00:50 | 0.9;10 | | |
| | Initial Cal. | Cont. Cal. |
| | %RSD | %D | % D | %D | % D | % D |
| 2-Bromobiphenyl | ok | ok | 30.2 | 25.5 | | |
| 3-Bromobiphenyl | · | | | | | |
| 4-Bromobiphenyl | | | | | | |
| Hexachlorobenzene | | | | | | |
| gamma-BHC (Lindane) | | | | | | |
| Aldrin | | | | | | |
| Heptaclor epoxide | | | | | | |
| gamma-Chlordane | | | | | | |
| alpha-Chlordane | | | | | | |
| trans-Nonachior | | | | | | |
| 4,4'-DDE | | | | | | |
| Dieldrin | | | | | | |
| 4,4'-DDD | | | | | | |
| cis-Nonachlor | | | | | | |
| 4,4'-DDT | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | |
| Toxaphene | | | | | | |
| Tetrachioro-m-xylene | | | | 6 . | | |
| Decachlorobiphenyl | | | | | | |
| Affected Samples: | | | K40141W | K40143W | | |
| | | | K40142W | K40144W | | |
| | | | K40143W | K40145W | | |
| | | | K40144W | K40146W | | |
| | | | K40145W | K40147W | | |
| | | | K40146W | K40148W | | |
| Γ | | | K40147W | K40149W | | |

| | K40148W | K40150W | |
|--|---------|---------|------|
| | K40149W | K40151W | |
| | K40150W | | |
| | K40151W | | |

Pesticide/PBB Calibration Summary - Page 3

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/12/94 | 5/13 | 5/13 | 5/14 | | |
|-----------------------------|-----------------|------------|------------|------------|------------|------------|
| Time: | 17;54 | 16:30 | 00:50 | 09:10 | | |
| , | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cai. | Cont. Cal. |
| | %ASD | %D | % D | % D | % D | % D |
| 2-Bromobiphenyl | ok | ok | ok | ok | | |
| 3-Bromobiphenyl | | | | | | |
| 4-Bromobiphenyl | | | | | | |
| Hexachlorobenzene | | | | | | |
| gamma-BHC (Lindane) | | | | | | |
| Aldrin | | | | | | |
| Heptaclor epoxide | | | | | | |
| gamma-Chlordane | | | | | | |
| alpha-Chiordane | | | | | | |
| trans-Nonachior | · | | | | | |
| 4,4'-DDE | ! | | | | | |
| Dieldrin | | | | | | |
| 4,4'-DDD | | | | | | |
| cis-Nonachlor | | | | | | |
| 4,4'-DDT | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | |
| Toxaphene | | | | | | |
| Tetrachioro-m-xylene | | | | | | |
| Decachlorobiphenyl | | | | | | |
| Affected Samples: | | | | | | |
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Pesticide/PBB Calibration Summary - Page 4

Instrument: <u>HP2404</u>
Column: <u>RTX-5</u>

| Date: | 5/26/94 | 5/27 | 5/27 | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 18:18 | 08:35 | 12:44 | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D |
| 2-Bromobiphenyl | ok | ok | ok | | | | |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | ļ | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chiordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | <u> </u> | |
| Dieldrin | • | | | | <u> </u> | <u> </u> | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | ļ | | | |
| 4,4'-DDT | | | | | | <u> </u> | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | : | | | | | | |
| Tetrachioro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 5

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/26/94 | 5/27 | 5/27 | | | |
|-----------------------------|-----------------|------------|------------|------------|------------|------------|
| Time: | 18:18 | 08:35 | 12:44 | | | |
| | Initial Cal. | Cont. Caf. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | %D | % D | % D | % D |
| 2-Bromobiphenyl | ok | ok | ok | | | |
| 3-Bromobiphenyl | | | | | | |
| 4-Bromobiphenyl | | | | | | |
| Hexachlorobenzene | | | | | | |
| gamma-BHC (Lindane) | | | | | | |
| Aldrin | | | | | | |
| Heptaclor epoxide | | | | | | |
| gamma-Chlordane | | | | | | |
| alpha-Chlordane | • | | | | | |
| trans-Nonachlor | | | | | | |
| 4,4'-DDE | | | | | | |
| Dieldrin | | | | | | |
| 4,4'-DDD | | | | | | · |
| cis-Nonachlor | | | | | | |
| 4,4'-DDT | | | | _ | | |
| Hexabromobiphenyl (BP-6) | | | | | | |
| Toxaphene | | | | | | |
| Tetrachioro-m-xylene | | | | • | | |
| Decachlorobiphenyl | | | | | | |
| Affected Samples: | | | | | | |
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Corrected Sample Analysis Data Sheets

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

K40141W

Client ID No.

SDG: 39566

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

 Lab Sample ID:
 197869

 Date Received:
 09/18/93

 Date Extracted:
 04/13/94

 Date Analyzed:
 05/13/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|--------------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.010 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.0095 | |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.012 | J |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50 29 3 | 4,4'-DDT | 0.0066 | ļ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |
| · | | | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40142W

39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 197870

 Date Received:
 09/18/93

 Date Extracted:
 04/13/94

 Date Analyzed:
 05/13/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|----------------------|--------------------|--------------------------|----|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | Uブ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | ŀ |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309 00 2 | Aldrin | 0.013 | | IR. |
| 1024-57-3 | Heptachlor Epoxide | 0.017 | NE | |
| 5103-74-2 | gamma-Chiordane | 0.0053 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | 1 |
| 72-55-9 | 4,4'-DDE | 0.026 | 7 | 1 |
| 60-57-1 | Dieldrin | 0.010 | U | 1 |
| 72-54-8 | 4,4'-DDD | 0.010 | U | 1 |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | 1 |
| 50-29-3 | 4,4'-DDT | 0.010 | U | 1 |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-35-2 | Toxaphene | 0.20 | U | 1 |

R

Client ID No. Lab Name: Aquatec, Inc. K40143W Lab Code: AQUAI 91082 Contract: Case: BIO SDG: 39566 Lab Sample ID: 197871 Phase Type: Biota Date Received: 09/18/93 Phase Weight: 10.0 Date Extracted: 04/13/94 Extraction: Soxhlet Date Analyzed: 05/14/94 Dilution Factor: 1.0 Sulfur Clean-up: Ν

| COMPOUND | CONCENTRATION (mg/Kg) | a |
|--------------------|---|---|
| 2-Bromobiphenyl | 0.010 | U-7 |
| 3-Bromobiphenyl | 0.010 | U |
| 4-Bromobiphenyl | 0.010 | U |
| Hexachlorobenzene | 0.0050 | U |
| gamma-BHC | 0.0050 | U |
| Aldrin | 0.022 | JN |
| Heptachlor Epoxide | 0.027 | , , , , , |
| gamma-Chlordane | 0.0093 | JN |
| alpha-Chlordane | 0.0050 | U |
| trans-Nonachlor | 0.0050 | U |
| 4,4'-DDE | 0.035 | |
| Dieldrin | 0.010 | U |
| 4,4'-DDD | 0.010 | U |
| cis-Nonachlor | 0.0050 | U |
| 4,4'-DDT | 0.010 | U |
| Hexabromobiphenyl | 0.020 | U |
| Toxaphene | 0.20 | U |
| | 2-Bromobiphenyl 3-Bromobiphenyl 4-Bromobiphenyl Hexachlorobenzene gamma-BHC Aldrin Heptachlor Epoxide gamma-Chlordane alpha-Chlordane trans-Nonachlor 4,4'-DDE Dieldrin 4,4'-DDD cis-Nonachlor 4,4'-DDT Hexabromobiphenyl | 2-Bromobiphenyl 0.010 3-Bromobiphenyl 0.010 4-Bromobiphenyl 0.010 Hexachlorobenzene 0.0050 gamma-BHC 0.0050 Aldrin 0.022 Heptachlor Epoxide 0.027 gamma-Chlordane 0.0093 alpha-Chlordane 0.0050 trans-Nonachlor 0.0050 A,4'-DDE 0.035 Dieldrin 0.010 4,4'-DDD 0.010 cis-Nonachlor 0.0050 4,4'-DDT 0.010 Hexabromobiphenyl 0.020 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40144W

SDG: 39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 197872

 Date Received:
 09/18/93

 Date Extracted:
 04/13/94

 Date Analyzed:
 05/14/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ 7 | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 308 00 2 | Aldrin | 0.0088 | | Æ |
| 1024 57 3 | Heptachlor Epoxide | 0.011 | | ·R |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | Ū | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.012 | 7 | |
| 60-57-1 | Dieldrin | 0.010 | U | 1 |
| 72-54-8 | 4,4'-DDD | 0.010 | Ü | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ü | |
| 8001-35-2 | Toxaphene | 0.20 | Ü | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40145W

39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 197873

 Date Received:
 09/18/93

 Date Extracted:
 04/13/94

 Date Analyzed:
 05/14/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α |
|------------|--------------------|-----------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | Ú |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0088 | JN. |
| 1024-57-3 | Heptachlor Epoxide | 0.0053 | JN |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | υ |
| 72-55-9 | 4,4'-DDE | 0.013 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40146W

39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 197874

Date Received: 09/18/93

Date Extracted: 04/13/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|----|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υJ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | C | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0:011 | | -R |
| 1024 57 3 | Heptachlor Epoxide | 0.015 | | -R |
| 5103-74-2 | gamma-Chlordane | 0.0050 | 7/ | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | } |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |] |
| 72-55-9 | 4,4'-DDE | 0.021 | | |
| 60-57-1 | Dieldrin | 0.010 | U |] |
| 72-54-8 | 4,4'-DDD | 0.010 | U | } |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |] |
| 50-29-3 | 4,4'-DDT | 0.010 | U |] |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO

Client ID No. K40147W

39566 SDG:

Phase Type: **Biota** Phase Weight: 10.0 Extraction: Soxhlet Dilution Factor: 1.0

Lab Sample ID: 197875 Date Received: 09/18/93 Date Extracted: 04/13/94 05/14/94 Date Analyzed: Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ | |
|------------|--------------------|-----------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | 77 | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.011 | JV | |
| 1024 57 3 | Heptachlor Epoxide | 0.0062 | | R |
| 5103-74-2 | gamma-Chiordane | 0.0050 | U | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | } |
| 39765-80-5 | trans-Nonachlor | 0.0050 | บ | |
| 72-55-9 | 4,4'-DDE | 0.016 | 7 | ĺ |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |] |
| 50-29-3 | 4,4'-DDT | 0.010 | U |] |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ü | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40148W

39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 197876

Date Received: 09/18/93

Date Extracted: 04/13/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.022 | JW | _ |
| 1024-57-3 | Heptachlor Epoxide | 0.031 | | R |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |] |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |] |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |] |
| 72-55-9 | 4,4'-DDE | 0.038 | | |
| 60-57-1 | Dieldrin | 0.010 | U |] |
| 72-54-8 | 4,4'-DDD | 0.011 | |] |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |] |
| 50-29-3 | 4,4'-DDT | 0.010 | U |] |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |] |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40149W

39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 197877

Date Received: 09/18/93

Date Extracted: 04/13/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N

SDG:

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Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40150W

SDG: 39566

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

 Lab Sample ID:
 197878

 Date Received:
 09/18/93

 Date Extracted:
 04/13/94

 Date Analyzed:
 05/14/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Ω | |
|------------|--------------------|-----------------------|----|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υσ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.013 | JN | |
| 1024-57-3 | Heptachlor Epoxide | 0.015 | | -R |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.017 | | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | , |
| 8001-35-2 | Toxaphene | 0.20 | U | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40151W

SDG: 39566

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 197879

Date Received: 09/18/93

Date Extracted: 04/13/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U , |
| 309-00-2 | Aldrin | 0.0096 | · JN |
| 1024-57-3 | Heptachlor Epoxide | 0.011 | |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.016 | |
| 60-57-1 | Dieldrin | 0.010 | υ |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40202W

39566

Phase Type: Biota
Phase Weight: 3.0 g
Extraction: Soxhlet

1.0

Dilution Factor:

 Lab Sample ID:
 200182

 Date Received:
 10/09/93

 Date Extracted:
 05/23/94

 Date Analyzed:
 05/27/94

 Sulfur Clean-up:
 N

SDG:

| | CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ā | |
|---|------------|--------------------|-----------------------|-----|-----|
| | 2052-07-5 | 2-Bromobiphenyl | 0.034 | U | |
| | 2113-57-7 | 3-Bromobiphenyl | 0.034 | U | |
| | 92-66-0 | 4-Bromobiphenyl | 0.034 | U . | |
| Г | 118-74-1 | Hexachlorobenzene | 0.017 | U | |
| | 58-89-9 | gamma-BHC | 0.017 | U | |
| | 309-00-2 | Aldrin | 0.043 | 5 | |
| | 1024-57-3 | Heptachlor Epoxide | 0.035 | | -R |
| | 5103-74-2 | gamma-Chlordane | 0.017 | U | ' ` |
| | 5103-71-9 | alpha-Chlordane | 0.017 | U | |
| Г | 39765-80-5 | trans-Nonachlor | 0.017 | U | |
| Г | 72-55-9 | 4,4'-DDE | 0.037 | 7 | |
| | 60-57-1 | Dieldrin | 0.034 | U | |
| Г | 72-54-8 | 4,4'-DDD | 0.034 | U | |
| | 5103-73-1 | cis-Nonachlor | 0.017 | Ú | } |
| | 50-29-3 | 4,4'-DDT | 0.034 | U |] |
| Г | 36355-01-8 | Hexabromobiphenyl | 0.067 | U | 1 |
| | 8001-35-2 | Toxaphene | 0.67 | U | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

K40203W

Client ID No.

SDG: 39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200183

Date Received: 10/09/94

Date Extracted: 05/24/94

Date Analyzed: 05/27/94

Sulfur Clean-up: N

| | | _ | | |
|------------|--------------------|--------------------------|----|---|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | υ | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.017 | 70 | |
| 1024-57-3 | Heptachlor Epoxide | 0.018 | | |
| 5103-74-2 | gamma-Chlordane | 0.0053 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | , |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.023 | 7 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | 1 |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |] |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

K40204W

39566

N

Client ID No.

Phase Type: Biota
Phase Weight: 10.4 g
Extraction: Soxhlet
Dilution Factor: 1.0

 Lab Sample ID:
 200184

 Date Received:
 10/09/94

 Date Extracted:
 05/24/94

 Date Analyzed:
 05/27/94

SDG:

Sulfur Clean-up:

| | CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|---|----------------------|--------------------|-----------------------|----|----|
| | 2052-07-5 | 2-Bromobiphenyl | 0.0097 | U | |
| | 2113-57-7 | 3-Bromobiphenyl | 0.0097 | Ú | |
| | 92-66-0 | 4-Bromobiphenyl | 0.0097 | Ü | |
| | 118-74-1 | Hexachlorobenzene | 0.0049 | U | |
| | 58-89-9 | gamma-BHC | 0.0049 | U | |
| | 309-00-2 | Aldrin | 0.020 | JN | |
| | 1024-57-3 | Heptachlor Epoxide | 0.023 | | |
| _ | 5103 74 2 | gamma Chlordane | 0.0062 | | -R |
| | 5103-71-9 | alpha-Chlordane | 0.0049 | U | • |
| | 39765-80-5 | trans-Nonachlor | 0.0049 | U | |
| | 72-55-9 | 4,4'-DDE | 0.026 | | |
| | 60-57-1 | Dieldrin | 0.0097 | U | |
| | 72-54-8 | 4,4'-DDD | 0.0097 | U | |
| | 5103-73-1 | cis-Nonachlor | 0.0049 | U | ! |
| | 50-29-3 | 4,4'-DDT | 0.0097 | U | i |
| | 36355-01-8 | Hexabromobiphenyl | 0.019 | U | l |
| | 8001-35-2 | Toxaphene | 0.19 | U | ĺ |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40205W

39566

Phase Type: Biota

Phase Weight: 10.3 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200185

Date Received: 10/09/94

Date Extracted: 05/24/94

Date Analyzed: 05/27/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|----------------------|--------------------|-----------------------|---|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.0098 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.0098 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.0098 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0049 | U | |
| 58-89-9 | gamma-BHC | 0.0049 | U | |
| 309 00 2 | Aldrin | 0.021 | | -R |
| 1024-57-3 | Heptachlor Epoxide | 0.023 | | 1 |
| 5103 74 2 | gamma Chlordane | 0.0077 | | -R |
| 5103-71-9 | alpha-Chlordane | 0.0049 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0049 | U | |
| 72-55-9 | 4,4'-DDE | 0.030 | | |
| 60-57-1 | Dieldrin | 0.0098 | U | |
| 72-54-8 | 4,4'-DDD | 0.0098 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0049 | U | l |
| 50-29-3 | 4,4'-DDT | 0.0092 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | Ū | |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40206W

39566

Phase Type: Biota

Phase Weight: 10.2 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200186

 Date Received:
 10/09/94

 Date Extracted:
 05/24/94

 Date Analyzed:
 05/27/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.0099 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.0099 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.0099 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.018 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.022 | |
| 5103-74-2 | gamma-Chlordane | 0.0056 | f |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.025 | |
| 60-57-1 | Dieldrin | 0.0099 | U |
| 72-54-8 | 4,4'-DDD | 0.0099 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.0099 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40207W

SDG: 39566

Phase Type: Biota
Phase Weight: 10.3 g
Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200187

 Date Received:
 10/09/94

 Date Extracted:
 05/24/94

 Date Analyzed:
 05/27/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|--------------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.0098 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.0098 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.0098 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0049 | U | |
| 58-89-9 | gamma-BHC | 0.0049 | U | |
| 309-00-2 | Aldrin | 0.024 | JN | |
| 1024-57-3 | Heptachlor Epoxide | 0.024 | | |
| 5103 74 2 | gamma-Chlordane | 0.0066 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | • |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.028 | J | |
| 60-57-1 | Dieldrin | 0.0098 | U | |
| 72-54-8 | 4,4'-DDD | 0.0098 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0049 | U | |
| 50-29-3 | 4,4'-DDT | 0.0098 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40208W

SDG: 39566

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200188

 Date Received:
 10/09/94

 Date Extracted:
 05/24/94

 Date Analyzed:
 05/27/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|----------------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.024 | NE |
| 1024-57-3 | Heptachlor Epoxide | 0.027 | |
| 5103 74 2 | gamma Chlordane | 0.0075 | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.032 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

K40209W Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 39566 SDG: BIO Case: Lab Sample ID: 200189 Phase Type: Biota Date Received: 10/09/94

Client ID No.

| Phase Weight: | 10.0 g | Date Extracted: | 05/24/94 |
|------------------|---------|------------------|----------|
| Extraction: | Soxhlet | Date Analyzed: | 05/27/94 |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N |
| | | - | |
| | | | |
| | | | |
| | | | |
| | | | |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|-------------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ü |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 308 00 2 | Aldrin | 0.016 | |
| 1024-57-3 | Heptachlor Epoxide | 0.021 | |
| 5103-74-2 | gamma-Chlordane | 0.0056 | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.033 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | Ü |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

K40210W Lab Name: Aquatec, Inc. AQUAI Lab Code: Contract: 91082 Case: BIO SDG: Lab Sample ID:

Client ID No.

39566

200190 Phase Type: Biota Date Received: 10/09/94 Phase Weight: 10.0 Date Extracted: 05/24/94 Extraction: Soxhlet 05/27/94 Date Analyzed: 1.0 Sulfur Clean-up: Dilution Factor:

| | | , | | |
|-------------|--------------------|-----------------------|---|----|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | _ |
| 309 00 2 | Aldrin | 0.019 | | -R |
| 1024-57-3 | Heptachlor Epoxide | 0.023 | | |
| | gamma Chlordane | 0.0062 | | -R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.027 | | l |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |] |
| 8001-35-2 | Toxaphene | 0.20 | U | |

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- * Duplicate analysis not within control limits.
- + Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

CRDL standard recovery was slightly above acceptable limits. No data fell in the affected range so no data qualification was necessary.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Due to a laboratory error, the sample intended to be used as the matrix spike was not spiked; therefore, no matrix spike recovery data is available.

4.2 Laboratory Duplicate

The difference between laboratory duplicates was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. General Comments

Due to a laboratory error, matrix spiking solution was inadvertantly added to sample K40203. Data for this sample has been rejected.

10. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

| | YES | NO | NA |
|--|----------|----|--------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | X | | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| Is the distillation log for cyanides present? | | | X |
| Are preparation dates present on sample preparation logs/bench sheets? | X | | |
| Are the measurement read out records present for: | | | |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | X |
| Mercury | X | | |
| Cyanides | | | X |
| Is the data legible? | × | | |
| is the data properly labeled? | X | | |
| Holding Times | | | |
| Were mercury analyses performed within 28 days? | <u> </u> | | |

| | YES | NO | NA |
|---|-------------|-------------|----|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | X | | |
| Are correct units indicated on Form I's? | X | | |
| Are all "less than IDL" values properly coded with "U"? | X | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | |
| Calibration | | | |
| ls a record of at least 2 point calibration present for ICP analysis? | | | X |
| ls a record of 5 point calibration present for Hg analysis? | X | | |
| ls a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | | | X |
| ls one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | X |
| ls correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verific | ation) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | X | | |
| Cyanides (85-115 %R)? | | | X |

| | YES | NO | NA |
|--|---------|--------------|----|
| Was continuing calibration performed every 10 samples or every 2 hours? | × | | |
| Was the ICV for cyanides distilled? | • | | X |
| Form II B (CRDL Standards for AA and ICP) | | , | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis? | <u></u> | - | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | | X | |
| Is mid-range standard within control limits for cyanide (80-120 %R) | | | X |
| Form III (Initial and Continuing Calibration Blanks) | | | |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | X | | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | | | X |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | X | | |
| each matrix type? | X | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | X | |

| | YES | NO | NA |
|--|-----------|---------|-------|
| If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | | X |
| is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL? | | | X |
| Is concentration of prep. blank below the negative CRDL? | | X | |
| Form IV (ICP Interference Check Sample) | | | |
| Present and complete? | | | X |
| Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | | | X |
| Are all Interference Check Sample results inside the control limits (±20%)? | | | X |
| If no, is concentration of AI, Ca, Fe, or Mg lower than the respective concentration in ICS? | | | X |
| Form V A (Spiked Sample Recovery - Pre-Digestion/P | re-Distil | lation) | |
| Present and complete for: | | | |
| each SDG? | | X | |
| each matrix type? | | X | |
| Was field blank used for spiked sample? | | X | |
| Are all recoveries within control limits (75-125)? | | | X |
| If no, is sample concentration greater than or equal to four times spike concentration? | | | X |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | | | X |
| Are any spike recoveries: | | | |
| less than 10%? | | | X |
| between 10-74%? | | | X |
| between 126-200%? | | | X |
| greater than 200%? | | | X |
| Form VI (Lab Duplicates) | | | |
| Present and complete for: | | | |
| each SDG? | X | | |

| NO | NA |
|--------------|-------------|
| | |
| X | |
| | |
| | X |
| X | |
| | X |
| | |
| | |
| | |
| | |
| X | |
| X | |
| | |
| | |
| | X |
| | X |
| | X |
| | × |
| | |
| | X |
| | X |
| | |
| - | x |
| | |

| | YES | NO | NA_ |
|--|------|-------|-----|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | · | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| Is analytical spike recovery outside the control limits (85-115%) for any sample? | | - | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | X | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | × |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | X |
| Field Blank | | | |
| Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | X |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | X | | |
| all the instruments used? | X | | |
| | | | |

| | YES | NO | NA |
|---|-----|----|----|
| Is IDL greater than CRDL for any analyte? | | X | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | | | X |
| Was any sample result higher linear range of ICP. | | | X |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | X | |
| If yes for any of the above, was the sample diluted to obtain the result on Form !? | | | X |

Corrected Sample Analysis Data Sheets

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQUA | TEC | | Contract: 93 | 108 | 2 | K40141W |
|---------------|------------------------|----------------------|-----------------|--|---------|-----------------|
| ab Code: AQUA | I_ Ca | se No.: BI | SAS No.: | SAS No.: | | |
| atrix (soil/w | ater): FISH | <u>_</u> | | La | b Samp | le ID: 197869 |
| evel (low/med |): LOW_ | _ | | Da | te Rec | eived: 09/18/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight): | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | | . | | _ . | | 1770 |
| | 7429-90-5 | | | 1-1 | | NR NR |
| | 7440-36-0 7440-38-2 | Antimony_ Arsenic | | - | | NR |
| | 7440-38-2 | Barium | | - | | NR |
| | 7440-41-7 | Beryllium | | - | | NR |
| | 7440-43-9 | Cadmium | | - | | NR |
| | 7440-70-2 | Calcium | | -1 | | NR |
| | 7440-47-3 | Chromium | | - | | NR |
| | 7440-48-4 | Cobalt | | - | | NR |
| | 7440-50-8 | Copper | | - | | NR |
| | 7439-89-6 | Iron | | <u> </u> | | NR |
| | 7439-92-1 | Lead | | | | NR |
| | 7439-95-4 | Magnesium | | | | NR |
| | 7439-96-5 | Manganese | |]_] | | NR |
| | 7439-97-6 | Mercury_ | 0.04 | I_I. | X | CV |
| | 7440-02-0 | Nickel | | _ | | NR |
| | 7440-09-7 | Potassium | | _ | | NR |
| | 7782-49-2 | Selenium_ | | _ | | NR |
| | | Silver | | _ | | NR |
| | 7440-23-5 | Sodium | | _ | | NR |
| | 7440-28-0 | Thallium | | - | | NR |
| | 7440-62-2 7440-66-6 | Vanadium_ | | 1-1 | | NR NR |
| | /440-66-6 | Zinc | | - | | NR NR |
| | | Cyanide | | | | |
| olor Before: | | | ty Before: | | | Texture: |
| olor After: | | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |
| | | | | | | |
| | | | | | | |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ab Nam | e: AQUAI | EC | | Contract: 91 | 108 | 2 | K40142W |
|--------|----------|------------------------|----------------------|----------------|---------------------|---------|----------------|
| ab Cod | e: AQUAI | Ca | se No.: BIG | SAS No.: | : _ | | SDG No.: 39566 |
| atrix | (soil/wa | ter): FISH | i_ | | La | b Sampl | e ID: 197870 |
| evel (| low/med) | : LOW_ | _ | | Da | te Rece | ived: 09/18/93 |
| Solid | s: | 100. | 0 | | | | |
| | Cor | ncentration | Units (ug | L or mg/kg dry | y w | eight): | MG/KG |
| | | CAS No. | Analyte | Concentration | c | Q | M |
| | | | _ | | | _ | |
| | | 7429-90-5 | | | _ | | NR |
| | | 7440-36-0 7440-38-2 | Antimony_ Arsenic | | - | | NR NR |
| | | 7440-38-2 | Barium | | - | | NR |
| | ļ | 7440-39-3 | Beryllium | | - | | NR |
| | | 7440-43-9 | | | - | | NR |
| | } | 7440-70-2 | | | - | | NR |
| | | 7440-47-3 | Chromium | | - | | NR |
| | | 7440-48-4 | Cobalt | | 1-1 | | NR |
| | | 7440-50-8 | Copper | | - | | NR |
| | | 7439-89-6 | Iron | | - | | NR |
| | | 7439-92-1 | Lead | ····· | - | | NR |
| ~ |] | 7439-95-4 | Magnesium | | - | | NR |
| | | 7439-96-5 | Manganese | | 1-1 | | NR |
| | | 7439-97-6 | Mercury | 0.04 | - | N | cv |
| | j | 7440-02-0 | Nickel | | 1_1 | | NR |
| | ì | 7440-09-7 | Potassium | | | | NR |
| | | 7782-49-2 | Selenium_ | | $\lfloor - \rfloor$ | | NR |
| | J | 7440-22-4 | Silver | | | | NR |
| | İ | 7440-23-5 | Sodium | | | | NR |
| | | 7440-28-0 | Thallium | | 1_1 | | NR |
| | | 7440-62-2 | Vanadium_ | | _ | | NR |
| | į | 7440-66-6 | Zinc | | 1-1 | | NR |
| | | | Cyanide | | - | | NR |
| olor B | efore: | | Clarit | y Before: | · — · | | Texture: |
| olor A | fter: | | Clarit | ty After: | | _ | Artifacts: |
| omment | s: | | | | | _ | |
| | | | | | | | |
| | | | | | | | |

INORGANIC ANALYSES DATA SHEET EPA SAMPLE NO.

| an Name: AOUA | TEC | | Contract: 91 | 1082 | <u> </u> | K40143W |
|---------------|-------------|----------------------|-----------------|--------------|----------|----------------|
| | | | | | | SDG No.: 39566 |
| atrix (soil/w | ater): FISH | _ | | Lab | Sample | e ID: 197871 |
| evel (low/med | i): LOW_ | _ | | Dat | e Rece | ived: 09/18/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y we | eight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q I | м |
| | 5455 55 | | | _ - | , | TTS |
| | 7429-90-5 | Aluminum | | _ - | | NR |
| | 7440-36-0 | Antimony_ | | - - | | NR |
| | 7440-38-2 | Arsenic | | - - | | NR NR |
| | | Barium | | - - | | NR NR |
| | | Beryllium Cadmium | | - | | NR NR |
| | | | | - | | NR NR |
| | | Calcium | | | | |
| | | Chromium_ | | 1-1- | | NR |
| | | Cobalt | | _ - | | NR |
| | | Copper | | _ - | | NR |
| | | Iron | | _ - | | NR |
| | | Lead | | _ - | | NR |
| _ | | Magnesium | | - - | | NR |
| | | Manganese | | - - | | NR |
| | | Mercury | 0.03 | _ . | | CV |
| | | Nickel | | _ - | | NR |
| | | Potassium | | l_l- | | NR |
| | | Selenium_ | <u></u> | _ - | | NR |
| | | Silver | | _ . | | NR |
| | | Sodium | | _ . | | NR |
| | | Thallium_ | | _ . | | NR |
| | | Vanadium_ | | _ . | | NR |
| | 7440-66-6 | Zinc | | _ _ | | NR |
| | | Cyanide | | _ - | | NR |
| | | | l | _ . | | 1 |
| olor Before: | | Clari | ty Before: | • | | Texture: |
| olor After: | | Clari | ty After: | | | Artifacts: |
| comments: | | | | | | |
| | | | | | | |
| | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| בם Name: AQUA | TEC | | Contract: 93 | 1082 | <u> </u> | K40144W |
|----------------|------------------------|------------------|-----------------|------|-------------|-----------------|
| | | | | | | SDG No.: 39566 |
| Matrix (soil/w | _ | | | | | le ID: 197872 |
| Level (low/med |): LOW_ | _ | | Dat | e Rec | eived: 09/18/93 |
| Solids: | 100. | 0. | | | | |
| | ncentration | Units (ug | /L or mg/kg dry | y we | eight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | M |
| | 7429-90-5 | Aluminum | | - - | | NR |
| | 7440-36-0 | Antimony_ | | | | NR |
| | 7440-38-2 | Arsenic_ | | _ _ | | NR |
| | 7440-39-3 7440-41-7 | Barium Beryllium | | - - | | NR NR |
| | 7440-43-9 | | | - - | | NR |
| | 7440-70-2 | | | - - | | NR |
| | 7440-47-3 | Chromium_ | | - - | | NR |
| | 7440-48-4 | Cobalt | | | | NR |
| | 7440-50-8 | Copper | | _ _ | | NR |
| | 7439-89-6 | Iron | | - - | | NR NR |
| | 7439-92-1 7439-95-4 | Magnesium | | - - | | NR NR |
| | 7439-96-5 | Manganese | | - - | | NR |
| | 7439-97-6 | Mercury | 0.05 | - - | N | cv |
| | 7440-02-0 | Nickel - | | 1-1- | _ | NR |
| | 7440-09-7 | Potassium | | | | NR |
| | 7782-49-2 | | | _ _ | | NR |
| | 7440-22-4 | | | - - | | NR |
| | 7440-23-5 7440-28-0 | Sodium Thallium | | - - | | NR NR |
| | 7440-62-2 | Vanadium | | - - | | NR |
| | 7440-66-6 | Zinc | | - - | | NR |
| | | Cyanide_ | | - - | | NR |
| Color Before: | 1 | Clari | ty Before: | | | Texture: |
| color After: | | Clari | ty After: | | | Artifacts: |
| Comments: | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40145W

| Lab Sample Date Receive Date R | |
|--|-------------|
| Cas No. Analyte Concentration C Q M | DG No.: 39 |
| Cas No. | ID: 197873 |
| Cas No. | ed: 09/18/ |
| CAS No. | • • |
| CAS No. | |
| CAS No. | C IYC |
| 7429-90-5 7440-36-0 7440-38-2 7440-39-3 Barium 7440-41-7 Part | .G/ NG |
| T429-90-5 | 1 |
| 7440-36-0 | |
| 7440-36-0 | |
| 7440-38-2 | |
| 7440-39-3 | |
| 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7440-92-0 7440-02-0 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7439-66-6 7439-96-6 7439-97-6 Marganese Mercury 7440-09-7 7782-49-2 7440-09-7 7782-49-2 7440-28-0 7440-28-0 7440-66-6 7440-66-6 Cyanide Or After: Clarity Before: Clarity After: And After: Cadmium Cadmium Cadmium Chromium Cobalt Copper Inn NR NR NR NR NR NR NR NR NR NR NR NR NR | |
| 7440-43-9 7440-70-2 7440-70-2 7440-48-4 Cobalt 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7440-02-0 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 Cyanide Or After: Clarity After: Amaginatum Calcium Chromium Calcium Chromium |
| 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-99-1 Lead 7439-95-4 Magnesium 7439-97-6 Mercury Nickel 7440-02-0 7440-02-0 7440-02-1 Selenium Selenium 7440-22-4 7440-23-5 Sodium 7440-28-0 7440-66-6 Cyanide Or After: Clarity Before: Clarity After: And NR NR NR NR NR NR NR NR NR NR NR NR NR N | |
| 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-02-4 7440-22-4 7440-22-4 7440-23-5 7440-28-0 7440-66-6 Cyanide Or Before: Clarity Before: Clarity After: Amage | |
| 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 Clarity Before: Clarity After: And Table 1 | |
| 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 Cyanide Or After: Clarity Before: Clarity After: And Advised to the series of the series o | |
| 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 Manganese 7440-02-0 7440-02-0 7440-02-1 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 7440-66-6 Cyanide Or After: Clarity After: And NR NR NR NR NR NR NR NR NR NR NR NR NR | 1 |
| 7439-89-6 7439-92-1 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-23-5 7440-66-6 Zinc Cyanide Or Before: Clarity Before: Clarity After: An | |
| 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-66-6 7440-66-6 Cyanide 7439-95-4 Magnesium Marcury Mickel Marcury Mickel Marcury Mickel Marcury Mickel Marcury Mickel Marcury Mickel Marcury Mickel Marcury Mickel Mi | |
| 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 Cyanide 7440-66-6 Clarity Before: Clarity After: And After: After | |
| 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 Cyanide Or Before: Clarity Before: Clarity After: Clarity After: Are a constant of the constant of th | |
| 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 7440-66-6 Cyanide Or Before: Clarity Before: Clarity After: Are Constant and | |
| 7440-02-0 Nickel | |
| 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Cyanide Or Before: Clarity Before: Clarity After: Are a contact of the contact of | |
| 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 7440-66-6 Cyanide Clarity Before: Clarity After: Are all imm NF NF NF NF NF NF NF NF NF NF NF NF NF | |
| 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Cyanide Clarity Before: Clarity After: Are a contact of the contact of t | |
| 7440-23-5 7440-28-0 7440-62-2 7440-66-6 Zinc Cyanide Clarity Before: Clarity After: Are a contact of the con | |
| 7440-28-0 Thallium | |
| 7440-62-2 Vanadium | |
| 7440-66-6 Zinc | |
| Cyanide NF Or Before: Clarity Before: Te | |
| or Before: Clarity Before: Te | |
| or After: Clarity After: Ar | ١) |
| or After: Clarity After: Ar | _ |
| <u> </u> | exture: |
| ments: | tifacts: |
| monte. | . CII uccs. |
| mentes. | |
| | |
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| | |

1 EPA SAMPLE NO.

| ab Name: AQU | ATEC | | Contract: 91 | 1082_ | : | K40146W |
|--------------|--------------|-----------------|-----------------|-------|--------|----------------|
| | | | | | | SDG No.: 39566 |
| atrix (soil/ | water): FISH | | | Lab | Sample | ⊇ ID: 197874 |
| evel (low/me | d): LOW_ | _ | | Date | Recei | ived: 09/18/93 |
| Solids: | 100. | 0 | | | | |
| C | oncentration | Units (ug | /L or mg/kg dry | y wei | ight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q I | <u> </u> |
| • | 7429-90-5 | Aluminum | <u> </u> | [_[_ | | NR |
| | 7440-36-0 | Antimony | | - - | | NR NR |
| • | 7440-38-2 | Arsenic Arsenic | | - | | NR |
| | 7440-39-3 | Barium | | - | | NR |
| | 7440-41-7 | Beryllium | | - | | NR . |
| | 7440-43-9 | Cadmium | | - | | NR |
| | 7440-70-2 | Calcium | | | | NR |
| | | Chromium | | - - | | NR |
| | | Cobalt | | - - | | NR |
| | | Copper | | i-I- | | NR |
| | 7439-89-6 | Iron | | - - | | NR |
| | 7439-92-1 | Lead | | - - | | NR |
| | | Magnesium | | [- - | | NR |
| | | Manganese | | - - | | NR |
| | | Mercury | 0.04 | - - | | cv |
| | | Nickel | | - - | | NR |
| | • | Potassium | | - - | | NR |
| | 7782-49-2 | Selenium | | - - | | NR |
| | | Silver | | - - | | NR |
| | 7440-23-5 | Sodium | | - - | —— l | NR |
| | 7440-28-0 | Thallium | | - - | | NR |
| | 7440-62-2 | Vanadium_ | | - - | | NR |
| | 7440-66-6 | Zinc - | | - - | | NR |
| | | Cyanide | | - - | | NR |
| | | | | | | |
| olor Before: | - | Clari | ty Before: | | | Texture: |
| olor After: | | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |
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1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
|-----|--------|-----|
|-----|--------|-----|

| o Name: AQUA | TEC | | Contract: 91 | 1082 | X40147W |
|--------------|-------------|-------------------|-----------------|---------------|-----------------|
| b Code: AQUA | .I_ Ca: | se No.: BI | SAS No.: | · | SDG No.: 3956 |
| trix (soil/w | ater): FISH | - | | Lab Samp | le ID: 197875 |
| vel (low/med |): LOW_ | _ | | Date Rec | eived: 09/18/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | | <u> </u> | | | |
| | 7429-90-5 | | | | NR |
| | 7440-36-0 | Antimony_ | | | NR NR |
| | | Arsenic Barium | | - | NR NR |
| | | Beryllium | | | NR NR |
| | | Cadmium | | - | NR |
| | | Calcium | | - | NR |
| | | Chromium | | - | NR |
| | | Cobalt | | | NR |
| | | Copper | | | NR |
| | | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | | NR |
| | | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.03 | <u> </u> | CV |
| | 7440-02-0 | Nickel | | | NR |
| | | Potassium | | | NR |
| | | Selenium_ | | | NR |
| | | Silver | | _ | NR |
| | | Sodium | | | NR |
| | | Thallium_ | | | NR |
| | | Vanadium_ | | | NR |
| | 7440-66-6 | Zinc | | <u> </u> | NR |
| | | Cyanide | | _ | NR |
| lor Before: | | Clari | ty Before: | . | Texture: |
| lor After: | | | ty After: | · | Artifacts: |
| | | | | | |
| mments: | | | | | |
| | | | | | |
| | | | | ** | |

1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
|-----|--------|-----|
|-----|--------|-----|

| io Name: AQUA | TEC | | Contract: 93 | LOE | 32 | K40148W |
|---------------|-------------|--------------|-----------------|-----|----------------|-----------------|
| | | | | | | SDG No.: 39566 |
| trix (soil/w | ater): FISH | - | | La | ab Sampl | e ID: 197876 |
| vel (low/med |): LOW_ | _ | | Da | te Rece | eived: 09/18/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | 7 V | veight): | MG/KG |
| | GNG No | 33 | | | | M |
| | CAS No. | Analyte | Concentration | ١٠١ | Q | Ti |
| | 7429-90-5 | Aluminum | | - | | NR |
| | 7440-36-0 | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic | | - | | NR |
| | 7440-39-3 | Barium | | - | | NR |
| | 7440-41-7 | Beryllium | | - | | NR |
| | 7440-43-9 | Cadmium | | - | | NR |
| | 7440-70-2 | Calcium | | | | NR |
| | 7440-47-3 | Chromium | | - | | NR |
| | 7440-48-4 | Cobalt | | - | | NR |
| | 7440-50-8 | Copper | | - | | NR |
| | 7439-89-6 | Iron | | - | | NR |
| | 7439-92-1 | Lead | | - | | NR |
| | 7439-95-4 | Magnesium | | - | | NR |
| | 7439-96-5 | Manganese | | - | | NR |
| | 7439-97-6 | Mercury | 0.03 | - | - V | CV |
| | | Nickel — | | - | ,/ | NR |
| | 7440-09-7 | Potassium | | - | | NR |
| | 7782-49-2 | Selenium | | - | | NR |
| | 7440-22-4 | Silver | | - | | NR |
| | 7440-23-5 | Sodium | | - | | NR |
| | 7440-28-0 | Thallium | | - | | NR |
| | 7440-62-2 | Vanadium_ | | - | | NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | 1440 00-0 | Cyanide | | - | | NR |
| | | | | - | | TAK |
| olor Before: | | Clarit | y Before: | - | | Texture: |
| olor After: | | | ty After: | | - | Artifacts: |
| omments: | | | | | | |
| | | | | | | |
| | | | | | | |

INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO |
|-----|--------|----|
|-----|--------|----|

| ab Name: AQUA | ATEC | | Contract: 91 | 108 | 32 | K40149W |
|---------------|-------------|--------------|-----------------|------------|----------|----------------|
| _ | | | | | | SDG No.: 39566 |
| trix (soil/w | ater): FISH | - | | La | ab Sampl | e ID: 197877 |
| vel (low/med | i): LOW_ | _ | | Da | te Rece | ived: 09/18/93 |
| Solids: | 100. | 0 | | | | |
| Cc | ncentration | Units (ug | /L or mg/kg dry | y w | veight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | M |
| | 7429-90-5 | Aliminim | | _ | | NR |
| | | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic | | - | | NR |
| | | Barium | | - | | NR |
| | | Beryllium | | 1-1 | | NR |
| | | Cadmium | | - | | NR |
| | | Calcium | | - | | NR |
| | 7440-47-3 | Chromium | | - | | NR |
| | 7440-48-4 | Cobalt - | | - | | NR |
| | 7440-50-8 | Copper | | - | | NR |
| | 7439-89-6 | Iron | | 1- | | NR |
| | 7439-92-1 | Lead | | - | | NR |
| | 7439-95-4 | Magnesium | | - | | NR |
| | | Manganese | | | | NR |
| | | Mercury | 0.03 | | | CV |
| | | Nickel | | | | NR |
| | | Potassium | | _ | | NR |
| | | Selenium_ | <u> </u> | _ | | NR |
| | | Silver | | | li | NR |
| | | Sodium | | _ | | NR |
| | | Thallium_ | | _ | | NR |
| | | Vanadium_ | | _ | | NR |
| | 7440-66-6 | Zinc | | _ | | NR |
| | | Cyanide | | - | | NR |
| lor Before: | | Clari | ty Before: | • | _ | Texture: |
| lor After: | | Clari | ty After: | | _ | Artifacts: |
| | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

K40150W

| Name: AQUATEC | | Contract: 91082 | | | 7401304 | |
|---------------|----------------|---|-----------------|---------------|---------------|-----------------|
| ab Code: A | AQUAI_ C | ase No.: BI | SAS No.: | : _ | | SDG No.: 39566 |
| atrix (soi | il/water): FIS | н_ | | La | b Samp | ole ID: 197878 |
| evel (low) | med): LOW | | | Da | te Rec | eived: 09/18/93 |
| Solids: | 100 | .0 | | | | |
| | Concentratio | n Units (ug | /L or mg/kg dry | y w | eight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - - | | - NR |
| | 7440-36-0 | | | - · | | NR |
| | 7440-38-2 | | | - - | | NR |
| | 7440-39-3 | | | - - | | NR |
| | 7440-41-7 | | | - : | | NR |
| | 7440-43-9 | | | - - | | NR |
| | 7440-70-2 | | | - : | | NR |
| | 7440-47-3 | 1 | | - - | | NR |
| | 7440-48-4 | | | - - | | NR |
| | 7440-50-8 | | | - - | | NR |
| | 7439-89-6 | · • • · · · · · · · · · · · · · · · · · | | - : | | NR |
| | 7439-92-1 | | | \ - · | | NR |
| | 7439-95-4 | | | - : | | NR |
| | 7439-96-5 | | | - : | | NR |
| | 7439-97-6 | | 0.03 | - : | N | - cv |
| | 7440-02-0 | | | - | —\ <u>`</u> — | NR |
| | 7440-09-7 | | | - | | NR |
| | 7782-49-2 | | | - | | NR |
| | 7440-22-4 | | | - | | NR |
| | 7440-23-5 | | | 1-1 | | NR |
| | 7440-28-0 | | | - | | - NR |
| | 7440-62-2 | · · · · · · · · · · · · · · · · · · · | | - | | - NR |
| | 7440-66-6 | | | - | | NR |
| | | Cyanide | | J-J | | NR |
| | | | | | | |
| olor Befor | re: | Clari | ty Before: | • | | Texture: |
| olor After | : | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |
| | | | | | | |
| | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ארים Name: AQUA | TEC | | Contract: 91 | L082 | K40151W |
|-----------------|--|--|-----------------|------------|---|
| Lab Code: AQUA | I_ Ca: | se No.: BIO | SAS No.: | | SDG No.: 39566_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Sample | e ID: 197879 |
| Level (low/med |): LOW_ | _ | | Date Rece | ived: 09/18/93 |
| % Solids: | 100.0 | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | c Q | m |
| | 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-96-5 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 | Antimony_Arsenic_Barium_Beryllium Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium Manganese Mercury_Nickel_Potassium Selenium_Silver_Sodium_Thallium_ | 0.04 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before: | | Clari | ty Before: | <u> </u> | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Lab Name: AQUATEC | | | Contract: 91082 | | K40202W |
|-------------------|---|--|-----------------|-------------|---|
| Lab Code: AO | UAI Ca | se No.: BIO | SAS No.: | | SDG No.: 39566 |
| | - /water): FISH | | ****** | | ple ID: 200182 |
| Level (low/m | ed): LOW_ | | | Date Re | ceived: 10/09/93 |
| & Solids: | 100. | 0 | | | |
| | Concentration | Units (ug/ | L or mg/kg dry | y weight | :): MG/KG |
| | CAS No. | Analyte | Concentration | c Q | м |
| | 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 | Aluminum_Antimony_Arsenic_Barium_Beryllium_Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium_Manganese_Mercury_Nickel_Potassium_Selenium_Silver_Sodium_Thallium_Vanadium_Zinc_Cyanide | 0.03 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before | : | Clarit | y Before: | • | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

| Level (low/med): LOW | SDG No.: 39566_ ample ID: 200183 Received: 10/09/93 |
|--|---|
| Matrix (soil/water): FISH | ample ID: 200183 |
| CAS No. Analyte Concentration C Q 7429-90-5 Aluminum 7440-36-0 Antimony 7440-39-3 Barium 7440-41-7 Beryllium 7440-43-9 Cadmium 7440-47-3 Chromium 7440-48-4 7440-50-8 7439-89-6 Iron | Pagaired: 10/09/93 |
| CAS No. Analyte Concentration C Q 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-43-9 7440-70-2 7440-47-3 7440-47-3 7440-48-4 7440-50-8 7439-89-6 Iron | |
| CAS No. | Received: 10/09/93 |
| CAS No. Analyte Concentration C Q 7429-90-5 7440-36-0 Antimony 7440-38-2 Arsenic 8arium 8eryllium 7440-43-9 Cadmium 7440-47-3 Chromium 7440-48-4 Cobalt 7440-50-8 7439-89-6 Iron | |
| 7429-90-5 7440-36-0 Antimony Arsenic Barium P440-41-7 P440-43-9 P440-70-2 P440-47-3 P440-48-4 P440-50-8 P440-50-8 P440-89-6 P440-90-50-8 P440-89-6 P440-90-50-8 P440-90-90-90-90-90-90-90-90-90-90-90-90-90 | ht): MG/KG |
| 7440-36-0 Antimony | M |
| 7440-36-0 Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Chromium Chromium Chapter Capper Chrom Chromium Chr | |
| 7440-38-2 Arsenic | NR |
| 7440-39-3 Barium 7440-41-7 Beryllium 7440-43-9 Cadmium 7440-70-2 Calcium 7440-47-3 Chromium 7440-48-4 Cobalt 7440-50-8 Copper 7439-89-6 Iron | NR |
| 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 Cadmium Cadmium Chromium Cobalt Ton | NR |
| 7440-43-9 Cadmium | NR |
| 7440-47-3 Chromium | NR |
| 7440-48-4 Cobalt | NR |
| 7440-50-8 Copper | NR NR |
| 7439-89-6 Iron | NR NR |
| | NR |
| 17470 07-1 (1864) | NR NR |
| 7439-92-1 Lead | NR NR |
| 7439-95-4 Magnesium | NR |
| 7439-96-5 Manganese | R R |
| 7440-02-0 Nickel | NR NR |
| 7440-09-7 Potassium - - | NR |
| 7782-49-2 Selenium - - - | NR NR |
| 7440-22-4 Silver | NR NR |
| 7440-23-5 Sodium - | NR NR |
| 7440-28-0 Thallium | NR |
| 7440-62-2 Vanadium | NR NR |
| 7440-66-6 Zinc | NR |
| Cyanide | NR NR |
| olor Before: Clarity Before: | Texture: |
| olor After: Clarity After: | Artifacts: |
| omments: | |
| | |
| | · · · · · · · · · · · · · · · · · · · |

1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
|-----|--------|-----|
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| | | INORGANIC A | ANALYSES DATA S | SHEET | (|
|----------------|--|---|-----------------|-----------|----------------------------------|
| Lab Name: AQUA | TEC | | Contract: 91 | 1082 | K40204W |
| Lab Code: AQUA | .I_ Ca | se No.: BI | SAS No.: | · | SDG No.: 39566_ |
| Matrix (soil/w | water): FISH | _ | | Lab Samp | le ID: 200184 |
| Level (low/med | l): LOW_ | _ | | Date Rec | eived: 10/09/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 | Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ | | | NR NR NR NR NR NR |
| | 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 | Copper | | | NR NR NR NR NR |
| | 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 | Manganese Mercury_ Nickel | 0.03 | | NR NR NR CV NR |
| | 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-63-3 | Sodium Thallium | | | NR NR NR NR NR NR |
| | 7440-62-2 7440-66-6 | Zinc Cyanide | | | NR NR |
| Color Before: | | Clari | ty Before: | - | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |

FORM I - IN ILM02.1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ניים Name: AQUA | rec | | Contract: 91 | 1082 | K40205W |
|-----------------|--|---|-----------------|------------|---|
| | | | | | SDG No.: 39566_ |
| Matrix (soil/wa | ater): FISH | - | | Lab Sampl | e ID: 200185 |
| Level (low/med) | : LOW_ | _ | | Date Rece | ived: 10/09/93 |
| % Solids: | 100. | 0 | | | |
| Cor | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-28-0 7440-62-2 | Antimony_Arsenic_Barium_Beryllium Cadmium_Calcium_Chromium_Cobalt_Copper_Iron_Lead_Magnesium Manganese Mercury_Nickel_Potassium Selenium_Silver_Sodium_Thallium_Vanadium_Zinc_Cyanide | 0.03 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before: | | | ty Before: | . | Texture: |
| Color After: | | Clarit | ty After: | | Artifacts: |
| Comments: | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| אס Na | me: AQUA | TEC | | Contract: 91 | 108: | 2 | K40206W |
|--------|----------|-------------|-----------|-----------------|--------------|---------|----------------|
| | | | | | | | SDG No.: 39566 |
| Matrix | (soil/w | ater): FISH | _ | | La | b Sampl | e ID: 200186 |
| evel | (low/med |): LOW_ | - | | Dat | te Rece | ived: 10/09/93 |
| Soli | lds: | 100. | D | | | | |
| | Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight): | MG/KG |
| | | CAS No. | Analyte | Concentration | С | Q : | <u> </u> |
| | | 7429-90-5 | Aluminum | | - - | | NR |
| | | | Antimony | <u> </u> | - - | | NR |
| | | 7440-38-2 | Arsenic | | - - | | NR |
| | | | Barium — | | - - | | NR |
| | | | Beryllium | | - - | | NR |
| | | 7440-43-9 | Cadmium | | - - | | NR |
| | | 7440-70-2 | Calcium |] | - - | | NR |
| | | 7440-47-3 | | | - | | NR |
| | | l · | Cobalt | | - - | | NR |
| | | | Copper | | - : | | NR |
| | | 7439-89-6 | Iron | | - : | | NR |
| | | | Lead | | - - | | NR |
| | | l . | Magnesium | | - : | | NR |
| | | | Manganese | | - - | | NR |
| | | | Mercury | 0.05 | - - | | cv |
| | | | Nickel - | 0.03 | - - | | NR |
| | | | Potassium | | - | | NR |
| | | | Selenium | | - - | | NR |
| | | | Silver | | - - | | NR |
| | | | Sodium | | - - | | NR |
| | | | Thallium | | - - | | NR |
| | | 4 | Vanadium_ | | 1-1 | | NR |
| | | | Zinc | | - - | | NR |
| | | 7440-00-0 | | | - - | | NR |
| | | | Cyanide | | | | III. |
| color | Before: | | Clari | ty Before: | | | Texture: |
| color | After: | | Clari | ty After: | | | Artifacts: |
| Commen | nts: | | | | | | |
| | · | | | | | | |
| | | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ao Name: AQU | ATECContract: 91082 | | | 32 | K40207W | |
|--------------|---------------------|---------------------|-----------------|-----|-----------------|-------------------------------|
| ab Code: AQU | AI_ Ca | se No.: BI | SAS No.: | : _ | <u></u> | SDG No.: 39566 |
| atrix (soil/ | water): FISH | | | La | ab Samp | le ID: 200187 |
| evel (low/me | d): LOW_ | _ | | Da | ate Rec | eived: 10/09/93 |
| Solids: | 100. | 0 | | | | |
| c | oncentration | Units (ug | /L or mg/kg dry | , v | veight) | : MG/KG |
| | | , | , | | | , 1 |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - | | $\left \frac{1}{NR} \right $ |
| | 7440-36-0 | Antimony | | _ | | NR |
| | 7440-38-2 | Arsenic | | | | NR |
| | 7440-39-3 | Barium | | | | NR |
| | 7440-41-7 | Beryllium | | _ | | NR |
| | | Cadmium_ | | _ | | NR |
| | | Calcium_ | | | | NR NR |
| | | Chromium_ Cobalt | | _ | | NR NR |
| | 7440-50-8 | CobaltCopper | | - | | NR NR |
| | 7439-89-6 | Iron | | - | | NR |
| | | Lead | | - | | NR |
| | | Magnesium | | - | l - | NR |
| | | Manganese | | - | - | NR |
| | | Mercury | 0.03 | _ | M | CV |
| | | Nickel - | · · · | _ | - | NR |
| | | Potassium | | | | NR |
| | | Selenium | | | | NR |
| | | Silver | | Ι_ | | NR |
| | | Sodium | | | | NR |
| | 7440-28-0 | Thallium | | | | NR |
| | 7440-62-2 | | | 1_ | | NR |
| | 7440-66-6 | Zinc | | |] | NR |
| | | Cyanide | | _ | | NR |
| | l | l | l | I | 1 | .11 |
| olor Before: | | Clari | ty Before: | • | _ | Texture: |
| olor After: | | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |
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FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ست Name: AQUA | TEC | | Contract: 91 | 1082 | K40208W |
|----------------|------------------------|-----------------------|-----------------|--------------------------|-----------------|
| | | | SAS No.: | | SDG No.: 39566 |
| | _ | | | | |
| Matrix (soil/w | ater): FISH | _ | • | Lab Samp | ole ID: 200188 |
| Level (low/med |): LOW_ | _ | | Date Rec | eived: 10/09/93 |
| & Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | M |
| | 7420-00-5 | 177 | | | - 175 |
| | 7429-90-5 7440-36-0 | Aluminum_ Antimony | | _ | NR NR |
| | 7440-38-2 | Arsenic | | - | NR |
| | 7440-39-3 | Barium - | | | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | | | | NR |
| | 7440-70-2 7440-47-3 | | | | NR NR |
| | 7440-47-3 | Cobalt | | | - NR |
| | • | Copper | | | - NR |
| | 7439-89-6 | Iron | | - | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | | NR |
| | 7439-96-5 | Manganese | | _ - | NR |
| | | Mercury Nickel | 0.03 | - -\ <u>-</u> - | CV |
| | 7440-02-0 | Potassium | | - | - NR |
| | 7782-49-2 | 1 - | | - | NR |
| | 7440-22-4 | | | - | NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium_ | | | NR |
| | 7440-62-2 | Vanadium_ | | _ _ | NR |
| | 7440-66-6 | Zinc | | | NR NR |
| | | Cyanitde | | - | - NK |
| Color Before: | | Clarit | ty Before: | <u>.</u> | Texture: |
| Color After: | | Clarit | ty After: | | Artifacts: |
| Comments: | | | - | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
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| | | 11.01.01H.10 | Enmitted Dillin . | | (|
|----------------|------------------------|--------------|---------------------------------------|--|-----------------|
| ab Name: AQUA | ATEC | | Contract: 9: | 1082 | K40209W |
| ab Code: AQUA | AI_ Ca | se No.: BIG | SAS No. | | SDG No.: 39566_ |
| Matrix (soil/w | water): FISH | _ | | Lab Samp | ole ID: 200189 |
| evel (low/med | i): LOW_ | _ | | Date Rec | eived: 10/09/93 |
| Solids: | 100. | 0 | | | |
| | | | | | 1/# /pa |
| Co | oncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | - | - NR |
| | 7440-36-0 | Antimony - | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | | Beryllium | | _ | NR |
| | 7440-43-9 | | | _ | NR |
| | 7440-70-2 | | | | NR |
| | 7440-47-3 | | | - | NR |
| | 7440-48-4 | | | - | NR NR |
| | 7440-50-8 | Copper | | - | NR |
| | 7439-89-6 7439-92-1 | Iron | | - | NR NR |
| | 7439-95-4 | Magnesium | | - | - NR |
| | 7439-96-5 | Manganese | | - | - NR |
| | 7439-97-6 | Mercury | 0.04 | - - | - cv |
| | 7440-02-0 | Nickel - | | - - - - | - NR |
| | 7440-09-7 | Potassium | | │ | NR |
| | 7782-49-2 | Selenium | | - | NR |
| | 7440-22-4 | | |]- | NR |
| | 7440-23-5 | | | - | NR |
| | 7440-28-0 | Thallium | | | NR |
| | 7440-62-2 | Vanadium_ | | - | NR |
| | 7440-66-6 | Zinc | | - | NR NR |
| | | Cyanide_ | | - - | NR |
| olor Before: | l | Clarit | ty Before: | t — (————— | Texture: |
| | | | | | |
| olor After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
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| | | | · · · · · · · · · · · · · · · · · · · | | |
| *** | | <u> </u> | | | |

INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
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| ر Name: AQUA | TEC | | Contract: 93 | L082 | K40210W |
|----------------|-------------|--------------|-----------------|------------------|-----------------|
| ab Code: AQUA | .I_ Ca | se No.: BI | O SAS No.: | | SDG No.: 39566_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Samp | le ID: 200190 |
| evel (low/med | l): LOW_ | _ | | Date Rece | eived: 10/09/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | ****** | | _ | NR |
| | | Antimony | | | NR NR |
| • | | Arsenic | | | NR |
| | | Barium | | - | NR |
| | | Beryllium | | | NR |
| | | Cadmium_ | | | NR |
| | | Calcium | | _ | NR |
| | | Chromium_ | | | NR |
| | | Cobalt | | | NR |
| | | Copper | | - | NR |
| | | Iron | | | NR NR |
| | | Magnesium | | | NR |
| | | Manganese | | - - | NR |
| | | Mercury | 0.03 | N | cv |
| | | Nickel'- | ° | - | NR |
| | | Potassium | | - - | NR |
| | | Selenium | | - | NR |
| | | Silver - | | | NR |
| | 7440-23-5 | Sodium | | | NR |
| | | Thallium | | | NR |
| | 1 | Vanadium_ | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | | NR |
| olor Before: | · | Clari | ty Before: | <u>s</u> | Texture: |
| olor After: | | Clari | ty After: | | Artifacts: |
| omments: | | | | | |
| · · | | | | | |
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MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

| Sample ID | Description | Sex | % Lipids |
|-----------|--------------|--------|----------|
| K40141W | White Sucker | female | 0.72 |
| K40142W | White Sucker | male | 0.66 |
| K40143W | White Sucker | male | 0.66 |
| K40144W | White Sucker | female | 0.67 |
| K40145W | White Sucker | female | 0.73 |
| K40146W | White Sucker | female | 0.68 |
| K40147W | White Sucker | male | 0.68 |
| K40148W | White Sucker | female | 1.23 |
| K40149W | White Sucker | male | 0.66 |
| K40150W | White Sucker | male | 0.79 |
| K40151W | White Sucker | male | 0.77 |
| K40202W | White Sucker | female | 2.96 |
| K40203W | White Sucker | male | 1.22 |
| K40204W | White Sucker | female | 2.37 |
| K40205W | White Sucker | male | 1.87 |
| K40206W | White Sucker | female | 2.39 |
| K40207W | White Sucker | male | 4.41 |
| K40208W | White Sucker | male | 2.23 |
| K40209W | White Sucker | male | 1.11 |
| K40210W | White Sucker | male | 1.27 |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39955

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39055 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

| | | | | | Analy | sis |
|-----------|--------|---------|-------------|-------------------|-----------------|--------|
| Sample ID | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %Llpid |
| K40169F | 216157 | carp | fillet | Below Allegan Dam | х | x |
| K40169R | 216158 | carp | Carcass | Below Allegan Dam | | × |
| K40170F | 216159 | carp | fillet | Below Allegan Dam | x | x |
| K40170R | 216160 | carp | carcass | Below Allegan Dam | | x |
| K40179F | 216161 | carp | fillet | Near Saugatuck | x | × |
| K40179R | 216162 | carp | carcass | Near Saugatuck | | x |
| K40180F* | 216163 | carp | fillet | Near Saugatuck | x | × |
| K40180R | 216164 | carp | carcass | Near Saugatuck | | x |
| K40181F | 216165 | carp | fillet | Near Saugatuck | x | x |
| K40181R | 216166 | carp | carcass | Near Saugatuck | | × |
| K40182F | 216167 | carp | fillet | Near Saugatuck | x | x |
| K40182R | 216168 | carp | carcass | Near Saugatuck | | x |
| K40183F | 216169 | carp | fillet | Near Saugatuck | x | х |
| K40183R | 216170 | carp | carcass | Near Saugatuck | | х |
| K40184F | 216171 | carp | fillet | Near Saugatuck | × | х |
| K40184R | 216172 | carp | carcass | Near Saugatuck | | × |
| K40185F | 216173 | carp | fillet | Near Saugatuck | x | × |
| K40185R | 216174 | carp | carcass | Near Saugatuck | | x |
| K40186F | 216175 | carp | fillet | Near Saugatuck | х | × |
| K40186R | 216176 | carp | carcass | Near Saugatuck | | × |
| K40187F | 216177 | carp | fillet | Near Saugatuck | x | × |
| K40187R | 216178 | carp | carcass | Near Saugatuck | | × |
| K40188F | 216179 | carp | fillet | Near Saugatuck | × | × |
| K40188R | 216180 | carp | carcass | Near Saugatuck | | × |
| K40189F | 216181 | carp | fillet | Near Saugatuck | x | × |
| K40189R | 216182 | carp | carcass | Near Saugatuck | | × |
| K40258F | 216187 | carp | fillet | Otsego City Dam | x | х |
| K40258R | 216188 | carp | carcass | Otsego City Dam | | × |

| | | | | | Analysis | |
|-----------|--------|---------|-------------|-----------------|-----------------|--------|
| Sample ID | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %Llpid |
| K40259F | 216189 | carp | fillet | Otsego City Dam | × | × |
| K40259R | 216190 | carp | carcass | Otsego City Dam | | x |
| K40260F | 216191 | carp | fillet | Otsego City Dam | × | x |
| K40260R | 216192 | carp | carcass | Otsego City Dam | | x |
| K40261F | 216193 | carp | fillet | Otsego City Dam | × | x |
| K40261R | 216194 | carp | carcass | Otsego City Dam | | x |
| K40262F | 216195 | carp | fillet | Otsego City Dam | x | x |
| K40262R | 216196 | carp | carcass | Otsego City Dam | | x |

^{*} MS/MSD/DUP performed on sample



Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for nonlinearity at the low end of the calibration curve.

<u>Identification</u>

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recovery of Aroclor 1254 in the matrix spike duplicate sample was below acceptable control limits. The relative percent difference between recoveries (RPD) for Aroclor 1254 was also outside the acceptable control limits. All matrix spike blank recoveries were, however, within acceptable control limits. The deviation is believed to be an isolated incident; therefore, no qualifiers have been added to the data based on spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA_ |
|--|-----|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | × | | |
| Are the outliers correctly marked with an asterisk? | | | X |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | | X | |
| If yes, were the samples reanalyzed? | | | × |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| 1 out of4 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| 1 out of2 | | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | X | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA_ |
|---|-----------|-------------|-----------|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u> x</u> | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Instrument Blanks | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | - · · · · |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?* | X | | |
| Are %D values for all compounds within limits (less than 15%)? | × | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| | | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|------|-------------|--|
| Cleanup Efficiency Verification | | | - |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | X | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | × |
| Compound Quantitation and Reported Detection Li | mits | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | - - - - - - - - - - |
| Where field duplicates submitted with the samples? | | X | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surrogates | - Column 1 | Surrogates | Column 2 |
|------------|-----------------|------------|---|------------|----------|
| | lime | тсх | DCB | осв тсх о | |
| K40169F | OK for all | ок | ок | ок | ОК |
| K40170F | samples | | | | |
| K40179F | | | | | |
| K40180F | | | | | · |
| K40180FMS | | | | | |
| K40180FMSD | | | | | |
| K40181F | | | | | |
| K40182F | | | | | |
| K40183F | | | | | |
| K40184F | | | *************************************** | | |
| K40185F | | | | | |
| K40186F | | | | | |
| K40187F | | | | | |
| K40188F | | | | | |
| K40189F | | | | | |
| K40258F | | | | | |
| K40259F | | | | | |
| K40260F | | | | | |
| K40261F | | | | | |
| K40262F | | | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogates diluted out Recovery high Recovery low D

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 4/30/94 0543 | 5/7 | 5/7 | 5/7 | 5/7 | 5/7 | 5/7 |
|----------------------|-------------------|---------------|---------------|---------------|---------------|---------------|------------|
| Time: | to 5/1/94 0106 | 0809 | 0843 | 1534 | 1608 | 2258 | 2333 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. |
| | %RSD | % D | % D |
| Aroclor 1016 | 4.2 / 4.4 | _ | 3.0 | | | | |
| Aroclor 1221 | 5.1 / 6.9 | | | | | | |
| Aroclor 1232 | 4.2 / 3.1 | | | | | | |
| Arocior 1242 | 3.1 / 3.4 | _ | | | 2.0 | | |
| Aroclor 1248 | 3.4 / 3.0 | 3.0 | | 2.0 | | 0.5 | |
| Aroclor 1254 | 3.1 / 3.6 | | | | | | 5.0 |
| Aroclor 1260 | 3.8 / 3.4 | | | | <u></u> | | |
| Tetrachloro-m-xylene | 5.2 / 6.4 | | | | | | |
| Decachlorobiphenyl | 7.9 / 8.1 | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 2

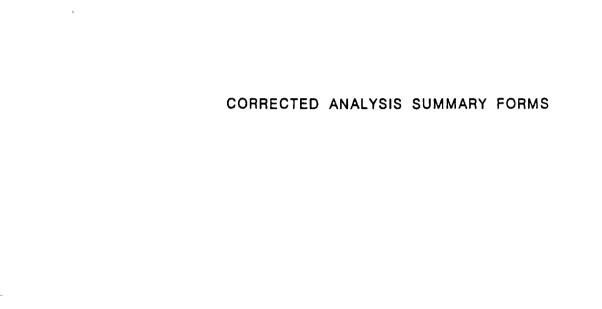
Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Arocior 1016 Arocior 1221 Arocior 1232 Arocior 1242 Arocior 1248 Arocior 1254 Arocior 1260 Tetrachioro-m-xylene Decachiorobiphenyi | initial Cal. | G624 Cont. Cat. %D | 0658 Cont. Cal. %D | 1058 Cont. Cal. %D | 1132 Cont. Cal. %D 3.0 | 1255 Cont. Cal. %D | 1330 Cont. Cal. %D |
|--|--------------|-----------------------------|--------------------|-----------------------------|------------------------------------|-----------------------------|-----------------------------|
| Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | Cal. %D | Cal. | Cal. | Cal. %D | Cal. | Cal. |
| Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | %RSD | | % D | % D | | % D | % D |
| Aroclor 1221 Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | 0.0 | | | 3.0 | | |
| Aroclor 1232 Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | 0.0 | | | | | |
| Aroclor 1242 Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | 0.0 | | | | | |
| Aroclor 1248 Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | 0.0 | | | | | |
| Aroclor 1254 Aroclor 1260 Tetrachloro-m-xylene | | 0.0 | | | | | |
| Aroclor 1260 Tetrachloro-m-xylene | | | | 1.0 | | 3.0 | |
| Tetrachloro-m-xylene | | | | | | | |
| | | | 2.5 | | | | 3.0 |
| Decachlorobiphenyl | - | | | | | | |
| | | | | | | | - |
| Affected Samples: | ï | | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 5/10 | 5/10 | 5/10 | 5/10 | | |
|----------------------|--------------|---------------|---------------|---------------|---------------------------------------|---------------|---------------|
| Time: | | 0423 | 0457 | 1147 | 1221 | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | % D | % D | %D | % D |
| Arocior 1016 | | | 0.5 | | | | |
| Arocior 1221 | | | | | | | |
| Aroclor 1232 | | | | | · · · · · · · · · · · · · · · · · · · | | |
| Aroclor 1242 | | | | | 6.0 | | |
| Aroclor 1248 | | 5.0 | | 6.5 | | | |
| Aroclor 1254 | | | | | | | |
| Aroclor 1260 | | | | | | | |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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EPA SAMPLE NO.

K40169F Lab Code: IAUDA Lab Name: Aguatec, Inc. BIO Contract: 91082 Case: SDG: 39955 Phase Type: **BIOTA** Lab Sample ID: 216157 Phase Weight: Date Received: 10/07/93 10.0 (g) Injection Volume: Date Extracted: 04/08/94 1.0 (uL)

Dilution Factor:

5.0

Sulfur Clean-up: N (Y/N)

05/08/94

Date Analyzed:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|--------------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 1.8 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | |

EPA SAMPLE NO. K40170F Lab Name: Aquatec, Inc. Lab Code: _ AQUAI 91082 SDG: __ 39955 BIO Contract: Case: Phase Type: **BIOTA** Lab Sample ID: 216159 Phase Weight: 10.0 Date Received: 10/07/93 (g) Injection Volume: 1.0 Date Extracted: 04/08/94 (uL) Dilution Factor: _ Date Analyzed: 05/08/94 5.0 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | ι |
| 11104-28-2 | Aroclor-1221 | 0.25 | L |
| 11141-16-5 | Aroclor-1232 | 0.25 | ι |
| 53469-21-9 | Aroclor-1242 | 0.25 | L |
| 12672-29-6 | Aroclor-1248 | 0.25 | ι |
| 11097-69-1 | Arocior-1254 | 2.5 | |
| 11096-82-5 | Aroclor-1260 | 0.29 | |

EPA SAMPLE NO. K40179F Lab Code: AQUAI Lab Name: Aquatec, Inc. SDG: __ 39955 91082 Case: BIO Contract: Lab Sample ID: 216161 Phase Type: **BIOTA** Phase Weight: 10.0 (g) Date Received: 10/08/93 Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 5.0 Dilution Factor: Date Analyzed: 05/07/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | С |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | Ü |
| 11141-16-5 | Aroclor-1232 | 0.25 | ι |
| 53469-21-9 | Aroclor-1242 | 0.25 | Ų |
| 12672-29-6 | Aroclor-1248 | 0.25 | l |
| 11097-69-1 | Aroclor-1254 | 1.9 | |
| 11096-82-5 | Aroclor-1260 | 0.26 | |

EPA SAMPLE NO. K40180F Lab Name: Aquatec, Inc. Lab Code: **AQUAI** 91082 39955 Contract: Case: BIO SDG: Phase Type: ___ **BIOTA** Lab Sample ID: 216163 Phase Weight: 10.0 Date Received: 10/08/93 **(g)** Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 Dilution Factor: ____ 5.0 Date Analyzed: 05/07/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | υ |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 2.6 | |
| 11096-82-5 | Aroclor-1260 | 0.29 | |

EPA SAMPLE NO. K40181F Lab Code: _ Lab Name: Aquatec, Inc. IAUDA 91082 Case: BIO SDG: 39955 Contract: __ Phase Type: **BIOTA** Lab Sample ID: 216165 Phase Weight: 10.0 Date Received: 10/08/93 (g) Injection Volume: __ 1.0 (uL) Date Extracted: 04/27/94 Dilution Factor: 05/09/94 5.0 Date Analyzed: (Y/N) Sulfur Clean-up: Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Arocior-1016 | 0.25 | U |
| 11104-28-2 | Arocior-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 2.2 | |
| 11097-69-1 | Aroclor-1254 | 1.3 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | U |

EPA SAMPLE NO. K40182F Lab Code: IAUDA Lab Name: Aquatec, Inc. 39955 91082 BIQ SDG: Contract: Case: Phase Type: **BIOTA** Lab Sample ID: 216167 Phase Weight: 10.0 **(g)** Date Received: 10/08/93 Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 Dilution Factor: _ 2.0 Date Analyzed: 05/08/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u> </u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Arocior-1016 | 0.10 | U |
| 11104-28-2 | Arocior-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | U |
| 12672-29-6 | Aroclor-1248 | 0.10 | υ |
| 11097-69-1 | Aroclor-1254 | 1.1 | |
| 11096-82-5 | Aroclor-1260 | 0.29 | |

EPA SAMPLE NO. K40183F Lab Name: Aquatec, Inc. Lab Code: AQUAI 39955 91082 Case: BIO SDG: Contract: Lab Sample ID: 216169 Phase Type: BIOTA Date Received: 10/08/93 Phase Weight: 10.0 (g) 1.0 Injection Volume: (uL) Date Extracted: 04/08/94 Dilution Factor: 15.0 Date Analyzed: 05/08/94 (Y/N) Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.75 | ι |
| 11104-28-2 | Aroclor-1221 | 0.75 | ι |
| 11141-16-5 | Aroclor-1232 | 0.75 | Ų |
| 53469-21-9 | Aroclor-1242 | 0.75 | Į |
| 12672-29-6 | Aroclor-1248 | 0.75 | · |
| 11097-69-1 | Aroclor-1254 | 8.5 | , |
| 11096-82-5 | Aroclor-1260 | 0.75 | ί |

EPA SAMPLE NO. K40184F Lab Code: AQUAI Lab Name: Aquatec, Inc. Case: 39955 91082 BIO SDG: Contract: Phase Type: **BIOTA** Lab Sample iD: 216171 10.0 10/08/93 Phase Weight: (9) Date Received: Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 Dilution Factor: 5.0 Date Analyzed: 05/08/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|----|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | ī |
| 53469-21-9 | Aroclor-1242 | 0.25 | Ĺ |
| 12672-29-6 | Aroclor-1248 | 0.25 | ι |
| 11097-69-1 | Aroclor-1254 | 2.3 | |
| 11096-82-5 | Aroclor-1260 | 0.28 | ·- |

EPA SAMPLE NO. K40185F Lab Name: Lab Code: AQUAI Aquatec, Inc. 91082 BIO SDG: ____ 39955 Contract: _ Case: __ Phase Type: **BIOTA** Lab Sample ID: 216173 Phase Weight: Date Received: 10/08/93 10.0 (g) Injection Volume: _ (uL) Date Extracted: 04/08/94 1.0 Dilution Factor: 15.0 Date Analyzed: 05/08/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.75 | U |
| 11104-28-2 | Aroclor-1221 | 0.75 | U |
| 11141-16-5 | Aroclor-1232 | 0.75 | U |
| 53469-21-9 | Aroclor-1242 | 0.75 | U |
| 12672-29-6 | Aroclor-1248 | 0.75 | U |
| 11097-69-1 | Aroclor-1254 | 8.7 | |
| 11096-82-5 | Aroclor-1260 | 0.75 | U |

EPA SAMPLE NO.

Phase Type: BIOTA Lab Sample ID: 216175

Phase Weight: 10.0 (g) Date Received: 10/08/93

Injection Volume: 1.0 (uL) Date Extracted: 04/08/94

Dilution Factor: 5.0 Date Analyzed: 05/08/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|--------------------------|----------|
| 12674-11-2 | Arocior-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | U |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 3.0 | |
| 11096-82-5 | Aroclor-1260 | 0.25 | U |

EPA SAMPLE NO. K40187F Lab Code: _ AQUAI Lab Name: Aquatec, Inc. 91082 BIO SDG: 39955 Contract: _ Case: Phase Type: **BIOTA** Lab Sample ID: 216177 Phase Weight: 10.0 **(g)** Date Received: 10/08/93 Injection Volume: (uL) Date Extracted: 04/08/94 1.0 Dilution Factor: _ Date Analyzed: 15.0 05/08/94 (Y/N) Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Arocior-1016 | 0.75 | U |
| 11104-28-2 | Aroclor-1221 | 0.75 | U |
| 11141-16-5 | Aroclor-1232 | 0.75 | U |
| 53469-21-9 | Aroclor-1242 | 0.75 | ί |
| 12672-29-6 | Aroclor-1248 | 0.75 | U |
| 11097-69-1 | Arocior-1254 | 7.9 | |
| 11096-82-5 | Aroclor-1260 | 0.98 | |

EPA SAMPLE NO. K40188F Lab Code: AQUAI Lab Name: Aquatec, Inc. SDG: 39955 91082 Case: BIO Contract: ____ Phase Type: **BIOTA** Lab Sample ID: 216179 Date Received: Phase Weight: 10.0 (g) 10/08/93 Injection Volume: ___ 1.0 (uL) Date Extracted: 04/08/94 Dilution Factor: 15.0 Date Analyzed: 05/08/94 (Y/N) Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.75 | U |
| 11104-28-2 | Aroclor-1221 | 0.75 | υ |
| 11141-16-5 | Aroclor-1232 | 0.75 | U |
| 53469-21-9 | Aroclor-1242 | 0.75 | U |
| 12672-29-6 | Aroclor-1248 | 0.75 | U |
| 11097-69-1 | Aroclor-1254 | 7.7 | |
| 11096-82-5 | Aroclor-1260 | 1.4 | |
| | | | |

EPA SAMPLE NO. K40189F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO SDG: _ 39955 Lab Sample ID: Phase Type: _ **BIOTA** 216181 Phase Weight: _ 10.0 Date Received: 10/08/93 **(g)** Injection Volume: 1.0 04/08/94 (uL) Date Extracted: Dilution Factor: 10.0 Date Analyzed: 05/08/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. COMPOUND | CONCENTRATION (mg/Kg) | | |
|------------------|-----------------------|------|---|
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 0.50 | U |
| 11097-69-1 | Aroclor-1254 | 3.1 | |
| 11096-82-5 | Aroclor-1260 | 0.62 | |

EPA SAMPLE NO. K40258F Lab Name: Aquatec, Inc. Lab Code: AQUAI SDG: Contract: 91082 Case: BIO 39955 Lab Sample ID: 216187 Phase Type: **BIOTA** Date Received: 10/13/93 Phase Weight: _ 10.0 (g) 04/08/94 Injection Volume: 1.0 Date Extracted: (uL) Dilution Factor: 10.0 Date Analyzed: 05/07/94 Sulfur Clean-up: N (Y/N)

| CAS NO. COMPOUND | | CONCENTRATION (mg/Kg) | |
|------------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 4.5 | |
| 11097-69-1 | Aroclor-1254 | 2.7 | |
| 11096-82-5 | Aroclor-1260 | 0.83 | |

EPA SAMPLE NO. K40259F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO SDG: 39955 Phase Type: **BIOTA** Lab Sample ID: 216189 Phase Weight: 10.0 Date Received: 10/13/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 Dilution Factor: 5.0 Date Analyzed: 05/07/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | Ų |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | Ų |
| 11097-69-1 | Aroclor-1254 | 1.1 | |
| 11096-82-5 | Aroclor-1260 | 0.79 | |

EPA SAMPLE NO. K40260F Lab Code: Lab Name: Aquatec, Inc. AQUAI SDG: 39955 91082 Case: BIO Contract: _ 216191 Phase Type: **BIOTA** Lab Sample ID: Phase Weight: 10.0 **(g)** Date Received: 10/13/93 Injection Volume: 1.0 (uL) Date Extracted: 04/08/94 2.0 Date Analyzed: 05/07/94 Dilution Factor: Sulfur Clean-up: (Y/N)

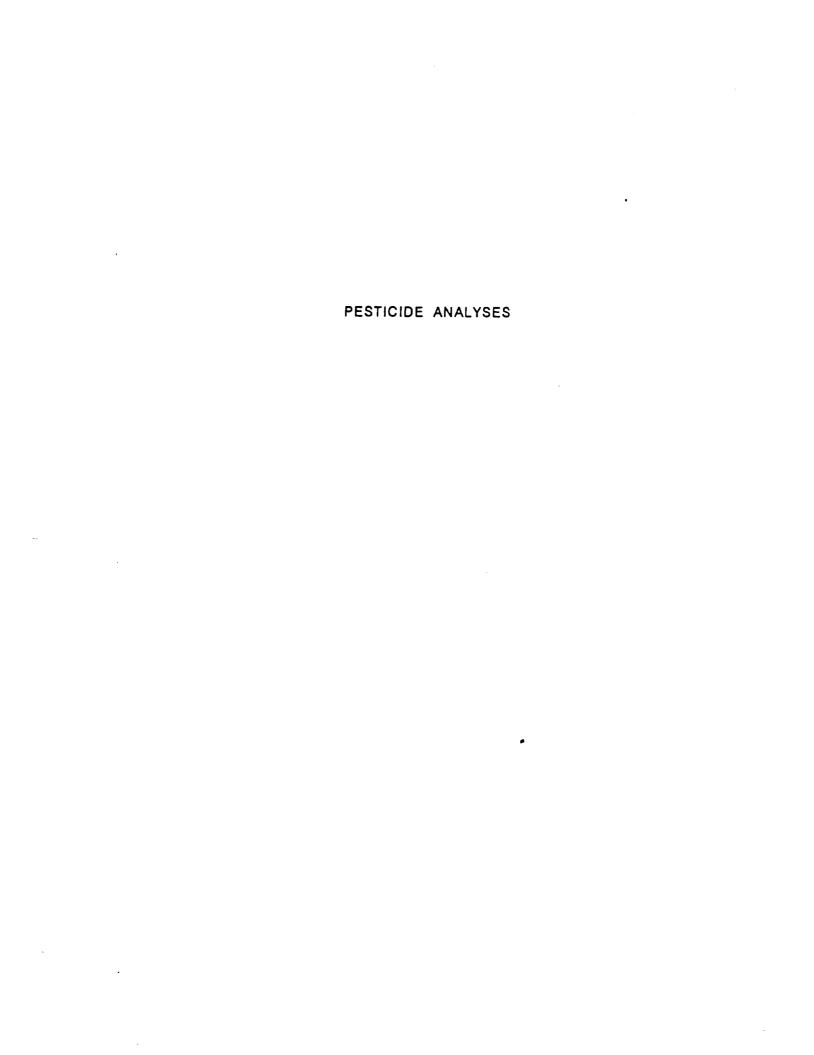
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | U |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 1.1 | |
| 12672-29-6 | Aroclor-1248 | 0.10 | |
| 11097-69-1 | Aroclor-1254 | 0.34 | |
| 11096-82-5 | Aroclor-1260 | 0.10 | Ų |

EPA SAMPLE NO. K40261F Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 Case: SDG: 39955 Contract: BIO **BIOTA** Lab Sample ID: 216193 Phase Type: Phase Weight: 10.0 (g) Date Received: 10/13/93 Injection Volume: 1.0 (uL) 04/08/94 Date Extracted: Dilution Factor: 5.0 Date Analyzed: 05/07/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.25 | U |
| 11104-28-2 | Aroclor-1221 | 0.25 | υ |
| 11141-16-5 | Aroclor-1232 | 0.25 | U |
| 53469-21-9 | Aroclor-1242 | 0.25 | U |
| 12672-29-6 | Aroclor-1248 | 0.25 | U |
| 11097-69-1 | Aroclor-1254 | 2.7 | |
| 11096-82-5 | Aroclor-1260 | 0.28 | |

EPA SAMPLE NO. K40262F Lab Name: Aquatec, Inc. Lab Code: AQUAI Case: SDG: ___ 91082 BIO 39955 Contract: __ Phase Type: **BIOTA** Lab Sample ID: 216195 Phase Weight: 10.0 Date Received: (g) 10/13/93 1.0 Injection Volume: (uL) Date Extracted: 04/08/94 Dilution Factor: 10.0 Date Analyzed: 05/07/94 Sulfur Clean-up: N (Y/N)

| CAS NO. COMPOUND | | CONCENTRATION (mg/Kg) | |
|------------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.50 | U |
| 11104-28-2 | Aroclor-1221 | 0.50 | U |
| 11141-16-5 | Aroclor-1232 | 0.50 | U |
| 53469-21-9 | Aroclor-1242 | 0.50 | U |
| 12672-29-6 | Aroclor-1248 | 0.50 | U |
| 11097-69-1 | Aroclor-1254 | 5.9 | |
| 11096-82-5 | Aroclor-1260 | 1.4 | |



Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. All samples were originally analyzed within the acceptable holding time. Dilutions for samples K40169F, K40170F, K40180F, K40182F, K40183F, K40185F, K40187F, K40188F, K40189F, K40258F, K40259F, K40260F and K40262F were, however, analyzed over the specified holding time. All data for the dilutions have been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit with the following exceptions:

Instrument HP2404 RTX-5 5/18/93 07:37

2-Bromobiphenyl 27.1%

All data for this compound in samples K40169F, K40170F, K40179F, K40180F, K40182F, K40183F, K40184F, K40185F, K40186F, K40187F, K40188F and K40189F have been qualified as estimated due to the deviation.

Instrument HP2404 RTX-5 5/20/93 01:18

2-Bromobiphenyl 55.4%

All data for this compound in samples K40169FDL, K40180FDL, K40182FDL, K40183FDL, K40185FDL, K40187FDL, K40188FDL, K40189FDL, K40258FDL, K40259FDL, K40260FDL and K40262FDL have been qualified as estimated due to the deviation.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40169F | 2-Bromobiphenyl | 303.9% |
|---------|-------------------|--------|
| | Hexachlorobenzene | 127.1% |
| | Aldrin | 49.3% |
| | gamma-Chlordane | 75.8% |
| | trans-Nonachlor | 36.6% |
| | cis-Nonachlor | 59.3% |
| | 4,4'-DDT | 324.5% |

| K40169FDL | 2-Bromobiphenyl Aldrin gamma-Chlordane trans-Nonachlor cis-Nonachlor 4,4'-DDT | 218.6% 52.8% 69.9% 44.1% 57.9% 366.1% |
|-----------|--|---|
| K40170F | 2-Bromobiphenyl Hexachlorobenzene Aldrin gamma-Chlordane trans-Nonachlor cis-Nonachlor 4,4'-DDT | 341.6% 64.6% 45.0% 45.0% 30.5% 40.6% 269.7% |
| K40170FDL | 2-Bromobiphenyl Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 289.0% 53.3% 46.4% 38.2% 300.6% |
| K40179F | 2-Bromobiphenyl Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 251.2% 72.1% 96.4% 78.5% 409.7% |
| K40180F | 2-Bromobiphenyl Hexachlorobenzene Heptachlor Epoxide cis-Nonachlor 4,4'-DDT | 377.7% 84.0% 38.8% 39.8% 208.5% |
| K40180FDL | 2-Bromobiphenyl Hexachlorobenzene Heptachlor Epoxide cis-Nonachlor 4,4'-DDT | 259.3% 117.5% 37.8% 52.0% 237.2% |
| K40181F | Aldrin alpha-Chlordane gamma-Chlordane trans-Nonachlor cis-Nonachlor Dieldrin 4,4'-DDT | 56.0% 42.0% 153.8% 343.6% 27.8% 129.7% 132.1% |
| K40182F | 2-Bromobiphenyl Hexachlorobenzene gamma-BHC Aldrin Heptachlor Epoxide 4,4'-DDT | 303.9% 88.5% 802.7% 52.0% 37.2% 204.6% |

| K40182FDL | 2-Bromobiphenyl Aldrin Heptachlor Epoxide 4,4'-DDT | 245.2% 57.2% 33.2% 229.7% |
|-----------|---|---|
| K40183F | Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 101.7% 129.7% 296.2% 663.0% |
| K40183FDL | Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 106.8% 120.1% 345.5% 697.7% |
| K40184F | 2-Bromobiphenyl Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 212.6% 90.0% 110.9% 420.0% 675.6% |
| K40185F | 2-Bromobiphenyl Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 29.0% 86.9% 92.7% 213.9% 624.5% |
| K40185FDL | Aldrin gamma-Chlordane trans-Nonachlor 4,4'-DDT | 88.7% 91.7% 345.3% 681.5% |
| K40186F | Aldrin gamma-Chlordane trans-Nonachlor cis-Nonachlor 4,4'-DDT | 76.7% 100.9% 349.4% 31.0% 602.7% |
| K40187F | Aldrin gamma-Chlordane 4,4'-DDT | 125.5% 91.1% 525.7% |
| K40187FDL | Aldrin gamma-Chlordane 4,4'-DDT | 122.4% 87.6% 546.1% |
| K40188F | Aldrin 4,4'-DDT | 90.0% 630.1% |
| K40188FDL | Aldrin gamma-Chlordane 4,4'-DDT | 90.8% 88.4% 645.7% |

| K40189F | Aldrin Heptachlor Epoxide gamma-Chlordane trans-Nonachlor 4,4'-DDT | 96.9% 108.7% 145.1% 193.8% 654.7% |
|-----------|---|--|
| K40189FDL | Aldrin Heptachlor Epoxide alpha-Chlordane gamma-Chlordane 4,4'-DDT | 99.2% 85.2% 25.3% 120.4% 681.9% |
| K40258F | Aldrin gamma-Chlordane trans-Nonachlor Dieldrin 4,4'-DDT | 47.7% 86.7% 94.9% 80.4% 499.3% |
| K40258FDL | Aldrin gamma-Chlordane Dieldrin 4,4'-DDT | 48.7% 86.8% 101.1% 546.8% |
| K40259F | Aldrin Heptachlor Epoxide alpha-Chlordane gamma-Chlordane trans-Nonachlor Dieldrin 4,4'-DDT | 30.6% 365.2% 33.0% 90.7% 265.4% 83.1% 603.5% |
| K40259FDL | Aldrin Heptachlor Epoxide alpha-Chlordane gamma-Chlordane Dieldrin 4,4'-DDT | 36.0% 300.0% 46.2% 69.4% 26.3% 676.4% |
| K40260F | Aldrin Heptachlor Epoxide gamma-Chlordane trans-Nonachlor 4,4'-DDT | 30.5% ,440.6% 110.0% 36.3% 59.5% |
| K40260FDL | Aldrin Heptachlor Epoxide gamma-Chlordane trans-Nonachlor 4,4'-DDT | 30.5% 395.2% 98.2% 37.2% 70.1% |

| K40261F | Aldrin Heptachlor Epoxide gamma-Chlordane trans-Nonachlor 4,4'-DDD 4,4-DDE 4,4'-DDT | 66.6% 731.9% 68.7% 395.8% 25.6% 33.5% 675.1% |
|-----------|---|--|
| K40262F | Aldrin Heptachlor Epoxide gamma-Chlordane 4,4'-DDT | 31.3% 39.4% 102.9% 667.7% |
| K40262FDL | Aldrin gamma-Chlordane 4,4'-DDT | 32.1% 96.0% 684.7% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were above the acceptable control limit in both the matrix spike and matrix spike duplicate samples. Recovery of Dieldrin was also above the acceptable control limit in the matrix spike sample. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers were added to the samples based on matrix spike performance.

8. General Comments

The recommended data usage for the sample dilutions is as follows:

K40169F and K40169FDL

The data from sample K40169F should be used for all compounds except Hexachlorobenzene and 4,4'-DDE. The data from the dilution K40169FDL should be used for Hexachlorobenzene and 4,4'-DDE only.

K40170F and K40170FDL

The data from sample K40170F should be used for all compounds except 4,4'-DDE. The data from the dilution K40170FDL should be used for 4,4'-DDE only.

K40180F and K40180FDL

The data from sample K40180F should be used for all compounds except alpha-Chlordane, trans-Nonachlor, Dieldrin and 4,4'-DDE. The data from the dilution K40180FDL should be used for alpha-Chlordane, trans-Nonachlor, Dieldrin and 4,4'-DDE only.

K40182F and K40182FDL

The data from sample K40182F should be used for all compounds except gamma-BHC and 4,4'-DDE. The data from the dilution K40182FDL should be used for gamma-BHC and 4,4'-DDE only.

K40183F and K40183FDL

The data from sample K40183F should be used for all compounds except 4,4'-DDE. The data from the dilution K40183FDL should be used for 4,4'-DDE only.

K40185F and K40185FDL

The data from sample K40185F should be used for all compounds except 4,4'-DDE. The data from the dilution K40185FDL should be used for 4,4'-DDE only.

K40187F and K40187FDL

The data from sample K40187F should be used for all compounds except gamma-Chlordane and 4,4'-DDE. The data from the dilution K40187FDL should be used for gamma-Chlordane and 4,4'-DDE only.

K40188F and K40188FDL

The data from sample K40188F should be used for all compounds except 4,4'-DDE. The data from the dilution K40188FDL should be used for 4,4'-DDE only.

K40189F and K40189FDL

The data from sample K40189F should be used for all compounds except Heptachlor Epoxide, trans-Nonachlor and 4,4'-DDE. The data from the dilution K40189FDL should be used for Heptachlor Epoxide, trans-Nonachlor and 4,4'-DDE only.

K40258F and K40258FDL

The data from sample K40258F should be used for all compounds except Aldrin, trans-Nonachlor and 4,4'-DDE. The data from the dilution K40258FDL should be used for Aldrin, trans-Nonachlor and 4,4'-DDE only.

K40259F and K40259FDL

The data from sample K40259F should be used for all compounds except gamma-Chlordane, trans-Nonachlor and 4,4'-DDE. The data from the dilution K40259FDL should be used for gamma-Chlordane, trans-Nonachlor and 4,4'-DDE only.

K40260F and K40260FDL

The data from sample K40260F should be used for all compounds except 4,4'-DDE. The data from the dilution K40260FDL should be used for 4,4'-DDE only.

K40262F and K40262FDL

The data from sample K40262F should be used for all compounds except 4,4'-DDE. The data from the dilution K40262FDL should be used for 4,4'-DDE only.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

| | YES | NO | NA_ |
|--|----------|-------------|-----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | <u> </u> | | |
| Are the samples numbers included in the narrative? | X | • | |
| Are the sample chain-of-custodies present? | <u> </u> | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | x | | |
| Are the outliers correctly marked with an asterisk? | | | X |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | | X | |
| If yes, were the samples reanalyzed? | | | X |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | \ | |
| 3 out of8 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| Is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | x | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|-------------|--------------|----|
| Is the chromatographic performance acceptable for each instrument? | x | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any trip/field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts preblanks, and MS/MSD? | esent for a | all samples, | |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | | |
| Toxaphene multipoint calibration | <u> </u> | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | x | | |
| Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | x | | |
| Is Form VII-1 present for each BCS analyzed for both columns? | x | | |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | | X | |
| Is Form VII-2 present and complete for each mid-point standard analyzed? | X | | |
| Are RPD values for all compounds < 25%? | | X | |
| Analytical Sequence Check | | | |

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA_ |
|---|----------|-------------|-------------|
| Is Form VIII present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | | X | |
| Are all samples listed on the form? | | | X |
| If GPC cleanup was performed, is Form IX-2 present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | | | X |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| Is a Form X present for every sample in which a pesticide or PCB was detected? | X | | |
| Was GC/MS confirmation provided when required? | | | X |
| Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | X | |
| Were there any false negatives? | | X | |
| Compound Quantitation and Reported Detection Limit | <u> </u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | · |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | _ |
| Where field duplicates submitted with the samples? | | X | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | Surrogales | - Column 1 | Surrogates | - Column 2 |
|------------|---------|------------|------------|------------|------------|
| | Time | тсх | DCB | тсх | DCB |
| K40169F | | ок | ок | ок | ок |
| K40169FDL | +1 | | | - | _ |
| K40170F | | | | | |
| K40170FDL | +3 | | | | |
| K40179F | | | | | |
| K40180F | | | | | |
| K40180FDL | +1 | | | | |
| K40180FMS | | | | | |
| K40180FMSD | | | | | |
| K40182F | | | | | |
| K40182FDL | +1 | | | | |
| K40183F | | | | | |
| K40183FDL | +1 | | | | |
| K40184F | | | | | |
| K40185F | | | | | |
| K40185FDL | +2 | | | | |
| K40186F | | | | | |
| K40187F | | | | | |
| K40187FDL | +2 | | | | |
| K40188F | | | | | |
| K40188FDL | +2 | | | | |
| K40189F | | | | | |
| K40189FDL | + 2 | | | ø | |
| K40258F | | | | | |
| K40258FDL | +2 | | | | |
| K40259F | | | | | |
| K40259FDL | + 2 | | | | |
| K40260F | | | | | |
| K40260FDL | + 2 | · | | | |
| K40261F | | ······ | | | |
| K40262F | | | | | |

| Sample ID | Holding | | | Surrogates - Column 2 | |
|-----------|---------|-----|-----|-----------------------|-----|
| | Time | тсх | DCB | тсх | DCB |
| K40262FDL | +2 | | | | |

Surrogates: TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogate diluted out Recovery high Recovery low ٥

Unless otherwise noted, all samples are within specified limits.

Instrument: <u>HP2404</u>
Column: <u>RTX-5</u>

| Date: | 5/17/94 | 5/18 | 5/18 | 5/19 | 5/19 | 5/20 | 5/20 |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|------------|---------------|
| Time: | 17:19 | 07:36 | 15;56 | 00:16 | 16:57 | 01:18 | 09:38 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | `%D | % D | %D | % D | % D | % D |
| 2-Bromobiphenyl | ok | 27.1% | ok | ok | ok | 55.4% | ok |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | <u> </u> | | |
| Tetrachioro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | L | | | | | | |
| Affected Samples: | | K40169F | | | | K40169FDL | |
| | | K40170F | | | | K40180FDL | |
| | | K40179F | | | | K40182FDL | |
| | | K40180F | | | | K40183FDL | |
| | | K40182F | | | | K40185FDL | |
| | | K40183F | | | | K40187FDL | |
| | | K40184F | | | | K40188FDL | |

| K40185F | K40189FDL |
|-----------------|-----------|
| K40186F | K40258FDL |
| K40187F | K40259FDL |
| K40188F | K40260FDL |
| K40189F | K40262FDL |
| K40180F- MS | |
| K40180F- MSD | |

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | | 5/21 | 5/22 | | • | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 10:37 | 10:29 | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %ASD | %D | %D | % D | % D | %D | % D |
| 2-Bromobiphenyl | | ok | ok | | | | |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | <u> </u> | |
| 4,4'-DDT | | | <u> </u> | | | | |
| Hexabromobiphenyl (BP-6) | | | | _ | | | |
| Toxaphene | | | | | | <u> </u> | |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Instrument: <u>HP2404</u>
Column: <u>RTX-35</u>

| Date: | 5/17/94 | 5/18 | 5/18 | 5/19 | 5/19 | 5/20 | 5/20 |
|-----------------------------|-----------------|------------------------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 17:19 | 07:36 | 15:56 | 00:16 | 16:57 | 01:18 | 09:38 |
| _ | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | %D | %D | %D | % D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | ok | ok |
| 3-Bromobiphenyl | | | | <u></u> | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | <u> </u> | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | - | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | _ | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | <u> </u> | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | · - · · · · · · · | | | | | |
| Tetrachioro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | | | | | | <u> </u> | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | | | |

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | | 5/21 | 5/22 | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 10:37 | 10:29 | | | | |
| , | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | % D | % D | %D | % D |
| 2-Bromobiphenyl | | ok | ok | | | | |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachiorobenzene | | | | | <u> </u> | | <u> </u> |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chiordane | | | | | | <u> </u> | <u> </u> |
| trans-Nonachlor | | | | <u> </u> | | <u> </u> | |
| 4,4'-DDE | | | | | | | <u> </u> |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | <u> </u> | |
| Tetrachloro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Corrected Sample Analysis Data Sheets

K40169F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 BIO SDG: 39955 Case: Lab Sample ID: 216157 Phase Type: Biota Date Received: 10/07/93

Client ID No.

| Phase Weight: Extraction: Dilution Factor: | 10.0 g Soxhlet 1.0 | Date Extracted: Date Analyzed: Sulfur Clean-up: | 04/08/94 05/18/94 N |
|--|--------------------------|---|---------------------------|
| | | | |
| ····· | | _ , | |
| CAS NO | COMPOUND | CONCENTRATION | 0 |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0:051 | | R |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ú | 1 |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ü | |
| 118-74-1 | | 0.010 0.0071 | UD | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.054 | J | |
| 1024-57-3 | Heptachlor Epoxide | 0.058 | | |
| 5103-74-2 | gamma-Chlordane | 0.033 | JV | |
| 5103-71-9 | alpha-Chlordane | 0.047 | | |
| 39765-80-5 | trans-Nonachior | 0.049 | J | |
| 72-55-9 | 4,4'-DDE | 0.20 0.19 | * D2 | |
| 60-57-1 | Dieldrin | 0.10 | | |
| 72-54-8 | 4,4'-DDD | 0.066 | | |
| 5103-73-1 | cis-Nonachlor | 0.028 | NT | |
| 50-29-3 | 4,4'-DDT | 0.029 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ú | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40170F

39955

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

 Lab Sample ID:
 216159

 Date Received:
 10/07/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.048 | | R |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachiorobenzene | 0.0096 | NC | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.042 | d | |
| 1024-57-3 | Heptachlor Epoxide | 0.046 | | |
| 5103-74-2 | gamma-Chlordane | 0.035 | C | |
| 5103-71-9 | alpha-Chlordane | 0.051 | | |
| 39765-80-5 | trans-Nonachlor | 0.050 | 5 | |
| 72-55-9 | 4,4'-DDE | 0,29 0.26 | * DJ | |
| 60-57-1 | Dieldrin | 0.16 | | |
| 72-54-8 | 4,4'-DDD | 0.066 | | |
| 5103-73-1 | cis-Nonachlor | 0.029 | j | |
| 50-29-3 | 4,4'-DDT | 0.035 | | - 6 |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |] ' |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40179F

SDG: 39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216161

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|----------|------|
| 2052-07-5 | 2 Bromobiphenyl | 0.050 | | TR. |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ū | 7 ` |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | 7 |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | ٦ |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.035 | JN | |
| 1024-57-3 | Heptachlor Epoxide | 0.031 | | 7 |
| 5103-74-2 | gamma-Chlordane | 0.020 | | 7r |
| 5103-71-9 | alpha-Chlordane | 0.023 | | |
| 39765-80-5 | trans-Nonachlor | 0.026 | JN | |
| 72-55-9 | 4,4'-DDE | 0.16 | | |
| 60-57-1 | Dieldrin | 0.073 | | |
| 72-54-8 | 4,4'-DDD | 0.038 | <u> </u> | 7 |
| 5103-73-1 | cis-Nonachlor | 0.032 | | 7 |
| 50-29-3 | 4,4'-DDT | 0.026 | | ∃R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 一, 、 |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40180F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216163

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| ĺ | | l | | 1 | |
|---|--------------------|--------------------|---------------|-------|---|
| | CAS NO. | COMPOUND | CONCENTRATION | ٥ | |
| | | | (mg/Kg) | | |
| | | | | | |
| | <u>-2052-07-5</u> | 2 Bromobiphenyl | 0.041 | | R |
| | 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| | 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| | 118-74-1 | Hexachlorobenzene | 0.012 | NC | |
| | 58-89-9 | gamma-BHC | 0.0050 | U | |
| | 309-00-2 | Aldrin | 0.034 | | |
| | 1024-57-3 | Heptachlor Epoxide | 0.049 | 7 | |
| | 5103-74-2 | gamma-Chlordane | 0.063 | | |
| | 5103-71-9 | alpha-Chlordane | 0.11 -0.10 | * DJ | |
| | 39765-80-5 | trans-Nonachlor | 0.11 0.10 | * DJ | |
| į | 72-55-9 | 4,4'-DDE | 0.33 -0.30- | X DEJ | |
| | 60-57-1 | Dieldrin | 0.18 0.18 | * DJ | |
| | 72-54-8 | 4,4'-DDD | 0.11 | | |
| | 5103-73-1 | cis-Nonachlor | 0.042 | d | |
| | 50-29-3 | 4,4'-DDT | 0.033 | | R |
| | 36355-01-8 | Hexabromobiphenyl | 0.020 | Ü |] |
| | 8001-35-2 | Toxaphene | 0.20 | Ū |] |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40181F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216165

 Date Received:
 10/08/93

 Date Extracted:
 04/27/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| 1 | | | | | |
|---|-----------------------|--------------------|---------------|-------------|-------|
| | CAS NO. | COMPOUND | CONCENTRATION | ٥ | |
| 1 | | | (mg/Kg) | | |
| | | | | | |
| | 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ | |
| | 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| | 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| | 118-74-1 | Hexachlorobenzene | 0.0050 | U | ! |
| | 58-89-9 | gamma-BHC | 0.0050 | U | 1 |
| | 309-00-2 | Aldrin | 0.059 | JN | 1 |
| | 1024-57-3 | Heptachlor Epoxide | 0.058 | | 1 |
| | 5103-74-2 | gamma Chlordane | 0.020 | | R |
| | 5103-71-9 | alpha-Chlordane | 0.013 | | 1 |
| | 39765-80-5 | trans Nonachior | 0.013 | | R |
| | 72-55-9 | 4,4'-DDE | 0.12 | | 1 |
| | 60 57 1 | Dieldrin | 0.015 | | 1R |
| | 72-54-8 | 4,4'-DDD | 0.030 | | 1 ` ` |
| | 5103-73-1 | cis-Nonachlor | 0.020 | J | 1 |
| | 50-29-3 | 4,4'-DDT | 0.016 | | R |
| | 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| | 8001-35-2 | Toxaphene | 0.20 | U | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40182F

SDG: 39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 216167

Date Received: 10/08/93

Date Extracted: 04/08/94

Date Analyzed: 05/18/94

Sulfur Clean-up: N

| | | | | |
|------------|--------------------|-------------------------|------|----|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
| 2052-07-5 | 2-Bromobiphenyl | 0.062 | Y | -R |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | • |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0087 | JN | |
| 58-89-9 | gamma-BHC | 0.010 0.0050 | uゴ | İ |
| 309-00-2 | Aldrin | 0.023 | NC | |
| 1024-57-3 | Heptachlor Epoxide | 0.029 | J | |
| 5103-74-2 | gamma-Chlordane | 0.042 | | |
| 5103-71-9 | alpha-Chlordane | 0.060 | | |
| 39765-80-5 | trans-Nonachlor | 0.063 | | l |
| 72-55-9 | 4,4'-DDE | 0,27 0.25 | * DJ | ĺ |
| 60-57-1 | Dieldrin | 0.13 | | |
| 72-54-8 | 4,4'-DDD | 0.095 | | |
| 5103-73-1 | cis-Nonachlor | 0.30 | | |
| 50-29-3 | 4,4'-DDT | 0.035 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | Ū | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40183F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216169

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|--------------------------|------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υJ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309 00 2 | - Aldrin | -0.060 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.053 | | |
| 5103-74-2 | gamma-Chlordane | 0.028 | | R |
| 5103-71-9 | alpha-Chlordane | 0.017 | | • |
| 39765-80-5 | trans Nonachior | -0.032 | | -R |
| 72-55-9 | 4,4'-DDE | 0.55 0.45 | * DJ | • |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.069 | | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50 29 3 | 4,4' DDT | 0.044 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | . ` |
| 8001-35-2 | Toxaphene | 0.20 | U | |
| | | | | |

 Lab Name:
 Aquatec, Inc.
 K40184F

 Lab Code:
 AQUAI

 Contract:
 91082

 Case:
 BIO

 SDG:
 39955

 Lab Sample ID:
 216171

 Place Type:
 10/08/03

Client ID No.

| Phase Type: | Biota | Date Received: | 10/08/93 | _ |
|------------------|---------|------------------|----------|---|
| Phase Weight: | 10.0 g | Date Extracted: | 04/08/94 | _ |
| Extraction: | Soxhlet | Date Analyzed: | 05/18/94 | _ |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N | _ |
| · | | | | _ |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|----|--------------------|
| 2052-07-5 | 2-Bromobiphenyl | 0.13 | Y | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | ٦, ا |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ú | 7 |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.045 | 77 | 7 |
| 1024-57-3 | Heptachlor Epoxide | 0.036 | | 7 |
| 5103-74-2 | gamma-Chlordane | 0.020 | | $\exists \epsilon$ |
| 5103-71-9 | alpha-Chlordane | 0.010 | | \neg |
| 39765-80-5 | trans Nonachler | 0.014 | | ∃≉ |
| 72-55-9 | 4,4'-DDE | 0.13 | | 7 |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.025 | | 7 |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.022 | | $\sqsupset \kappa$ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | \neg |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40185F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216173

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| | CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ | |
|---|--------------------|--------------------|-----------------------|------------|----|
| | 2052-07-5 | 2-Bromobiphenyl | 0.054 | * 7 | |
| | 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| | 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| | 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| | 58-89-9 | gamma-BHC | 0.0050 | U | |
| | 309-00-2 | Aldrin | 0.11 | NE | |
| | 1024-57-3 | Heptachlor Epoxide | 0.10 | | |
| ł | 5103-74-2 | gamma-Chlordane | 0.052 | | R |
| | 5103-71-9 | alpha-Chlordane | 0.026 | | |
| | 39765-80-5 | trans-Nonachlor | 0:042 | | -R |
| | 72-55-9 | 4,4'-DDE | 0.38 0.33 | * 22 | ` |
| | 60-57-1 | Dieldrin | 0.010 | U | |
| | 72-54-8 | 4,4'-DDD | 0.069 | | |
| | 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| | 50 29 3 | 4,4'-DDT | 0.047 | | R |
| | 36355-01-8 | Hexabromobiphenyl | 0.020 | U | • |
| | 8001-35-2 | Toxaphene | 0.20 | U | |

10.0

1.0

Hexabromobiphenyl

Toxaphene

Soxhlet

Extraction:

Dilution Factor:

36355-01-8

8001-35-2

K40186F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO SDG: 39955 Lab Sample ID: 216175 Phase Type: Date Received: **Biota** 10/08/93 Phase Weight:

Date Extracted:

Date Analyzed:

Sulfur Clean-up:

0.020

0.20

Client ID No.

04/08/94

05/18/94

N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|----------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.053 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.041 | |
| 5103-74-2 | - gamma-Chlordane | 0.022 | |
| 5103-71-9 | alpha-Chlordane | 0.011 | |
| 39765-80 5 | trans-Nonachlor | 0.016 | |
| 72-55-9 | 4,4'-DDE | 0.13 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.031 | |
| 5103-73-1 | cis-Nonachlor | 0.023 | J |
| 50-29-3 | 1,4'-DDT | 0.018 | |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40187F

39955

216177

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor:

1.0

Date Received: 10
Date Extracted: 04
Date Analyzed: 05

Lab Sample ID:

10/08/93 04/08/94 05/18/94

Sulfur Clean-up: N

SDG: __

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|--------------------|--------------------|-----------------------|-----|----|
| 205 <i>2</i> -07-5 | 2-Bromobiphenyl | 0.010 | UJ | 1 |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | 1 |
| ··· 92-66-0 | 4-Bromobiphenyl | 0.010 | U | 7 |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | 7 |
| 58-89-9 | gamma-BHC | 0.0050 | U | 7 |
| 308-00-2 | Aldrin | 0.042 | | 7, |
| 1024-57-3 | Heptachlor Epoxide | 0.031 | | 7 |
| 5103-74-2 | gamma-Chlordane | 0.038 0.034 | NEG | 7 |
| 5103-71-9 | alpha-Chlordane | 0.018 | | 7 |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | 7 |
| 72-55-9 | 4,4'-DDE | 0.30 0.27 | * M | 7 |
| 60-57-1 | Dieldrin | 0.010 | U | 7 |
| 72-54-8 | 4,4'-DDD | 0.032 | | 7 |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | ٦ |
| 50-20-3 | 4,4'-DDT | 0.059 | | 7 |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | ٦ |
| 8001-35-2 | Toxaphene | 0.20 | U | 7 |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40188F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216179

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|--------------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.088 | X EJN |
| 1024-57-3 | Heptachlor Epoxide | 0.079 | |
| 5103-74-2 | gamma-Chlordane | 0.048 | |
| 5103-71-9 | alpha-Chlordane | 0.026 | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.34 0.30- | X DEI |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.058 | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4' DDT | 0.057 | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

·R

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40189F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216181

 Date Received:
 10/08/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|-----------------------|-----|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.055 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.064 -0.058 | DJN | |
| 5103-74-2 | gamma-Chlordane | 0.023 | | -R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | υJ | |
| 39765-80-5 | trans-Nonachior | 0.034 0.024 | D2 | |
| 72-55-9 | 4,4'-DDE | C.22 -0.22 | *77 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.038 | | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4' DDT | 0.031 | | F |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | Ū | 1 |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40258F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216187

 Date Received:
 10/13/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
|------------|--------------------|--------------------------|-------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.15 0.13 | * DJ | |
| 1024-57-3 | Heptachlor Epoxide | 0.076 | | |
| 5103-74-2 | gamma-Chlordane | 0.049 | NC | |
| 5103-71-9 | alpha-Chlordane | 0.038 | | |
| 39765-80-5 | trans-Nonachlor | 0.010 -0.053- | UDJ | |
| 72-55-9 | 4,4'-DDE | 0.32 0.28 | * DEJ | |
| 60-57-1 | Dieldrin | 0.046 | JN | |
| 72-54-8 | 4,4'-DDD | 0.15 | | |
| 5103-73-1 | cis-Nonachlor | 0.051 | | |
| 50-29-3 | 4,4'-DDT | 0.045 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | . ` |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc. Lab Code: IAUDA Contract: 91082 BIO Case:

K40259F

39955

Client ID No.

Phase Type: Biota Phase Weight: 10.0 Extraction: Soxhlet

Dilution Factor:

1.0

Lab Sample ID: 216189 10/13/93 Date Received: 04/08/94 Date Extracted: Date Analyzed: 05/18/94 Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | υ | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | υ | |
| 309-00-2 | Aldrin | 0.022 | J | |
| 1024-57-3 | Heptachlor Epoxide | 0.016 | | R |
| 5103-74-2 | gamma-Chlordane | 0.012 0.011 | NEG | |
| 5103-71-9 | alpha-Chlordane | 0.011 | 7 | |
| 39765-80-5 | trans-Nonachior | U.UIO -0.011 | UJD | |
| 72-55-9 | 4,4'-DDE | 0.17 0.17 | * DJ | |
| 60-57-1 | Dieldrin | 0.015 | 77 | |
| 72-54-8 | 4,4'-DDD | 0.069 | | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.026 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | ` |
| 8001-35-2 | Toxaphene | 0.20 | U | |

10.0

Soxhlet

1.0

Phase Weight:

Dilution Factor:

Extraction:

K40260F Lab Name: Aquatec, Inc. Lab Code: IAUDA Contract: 91082 39955 Case: BIO SDG: Lab Sample ID: 216191 Phase Type: Date Received: 10/13/93 Biota

Date Extracted:

Date Analyzed:

Sulfur Clean-up:

Client ID No.

04/08/94

05/18/94

Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q | |
|------------|--------------------|-----------------------|--------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.034 | 4 | |
| 1024-57-3 | Heptachler Epoxide | 0.026 | | R |
| 5103-74-2 | gamma-Chlordane | 0.010 0.010 | LCN | i |
| 5103-71-9 | alpha-Chlordane | 0.013 | | |
| 39765-80-5 | trans-Nonachlor | 0.011 | 5 | |
| 72-55-9 | 4,4'-DDE | 0,23 0.22 | - X)), | |
| 60-57-1 | Dieldrin | 0.035 | | |
| 72-54-8 | 4,4'-DDD | 0.092 | | |
| 5103-73-1 | cis-Nonachlor | 0.0065 | | |
| 50-29-3 | 4,4'-DDT | 0.024 | JN | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | l |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Biota

Soxhlet

1.0

9

10.0

Phase Type:

Extraction:

Phase Weight:

Dilution Factor:

Client ID No.
K40261F

39955

SDG:

 Lab Sample ID:
 216193

 Date Received:
 10/13/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| | - 1 | ······································ | | i |
|------------|--------------------|--|-------------|-----|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U ' | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | l |
| 58-89-9 | gamma-BHC | 0.0050 | U | 1 |
| 309-00-2 | Aldrin | 0.036 | JN. | 1 |
| 1024-57-3 | Heptachlor Epoxido | 0.014 | | R |
| 5103-74-2 | gamma-Chlordane | 0.018 | JN | , |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | 1 |
| 39765-80-5 | trans-Nonachior | 0.012 | 7 | R |
| 72-55-9 | 4,4'-DDE | 0.075 | | 1 ` |
| 60-57-1 | Dieldrin | 0.010 | U | 1 |
| 72-54-8 | 4,4'-DDD | 0.014 | | 1 |
| 5103-73-1 | cis-Nonachlor | 0.024 | | 1 |
| 50-29-3 | 4,4'-DDT | 0.018 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-35-2 | Toxaphene | 0.20 | U | |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40262F

39955

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 216195

 Date Received:
 10/13/93

 Date Extracted:
 04/08/94

 Date Analyzed:
 05/18/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | Ū | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.057 | 7 | |
| 1024-57-3 | Heptachlor Epoxide | 0.045 | 7 | |
| 5103-74-2 | gamma-Chlordane | - 0.028 | | R |
| 5103-71-9 | alpha-Chlordane | 0.015 | | |
| 39765-80-5 | trans-Nonachior | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.34 0.22 | * 22 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.049 | | Ì |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | 1 |
| 50-29-3 | 4,4' DDT | 0.051 | | R |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | ' |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- Duplicate analysis not within control limits.
- + Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

The CRDL standard recovery was above acceptable limits. No data fell in the affected range; therefore, no sample qualification was necessary.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was below acceptable limits. All data have been qualified as estimated based on the deviation.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

Inorganic Data Validation Checklist

| | YES | NO | NA |
|--|----------|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | X | <u>.</u> | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| Is the distillation log for cyanides present? | | | X |
| Are preparation dates present on sample preparation logs/bench sheets? | × | | |
| Are the measurement read out records present for: | | | |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | X |
| Mercury | × | | |
| Cyanides | | | X |
| Is the data legible? | × | | |
| Is the data properly labeled? | × | | |
| Holding Times | | <u> </u> | |
| Were mercury analyses performed within 28 days? | <u> </u> | | |

Inorganic Data Validation Checklist - Page 2

| | YES | NO | NA |
|---|----------|-------|-------------|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | <u> </u> | | |
| Are correct units indicated on Form I's? | X | | |
| Are all "less than IDL" values properly coded with "U"? | X | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | |
| Calibration | | | |
| Is a record of at least 2 point calibration present for ICP analysis? | | | X |
| Is a record of 5 point calibration present for Hg analysis? | X | | |
| Is a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | | | <u> </u> |
| Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | × |
| ls correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verifica | ation) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | X | | |
| Cyanides (85-115 %R)? | | | X |
| | | | |

Inorganic Data Validation Checklist - Page 3

| | YES | NO | NA |
|--|-----|----------|----|
| Was continuing calibration performed every 10 samples or every 2 hours? | X | | |
| Was the ICV for cyanides distilled? | | | X |
| Form II B (CRDL Standards for AA and ICP) | | | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis? | | | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | | X | |
| Is mid-range standard within control limits for cyanide (80-120 %R) | | | × |
| Form III (Initial and Continuing Calibration Blanks) | | | |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | <u> </u> | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | X | | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | | | X |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | X | | |
| each matrix type? | X | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | X | |

Inorganic Data Validation Checklist - Page 4

| | YES | NO | NA |
|--|-----------|----------------|---------|
| If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | | X |
| Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL? | | | X |
| Is concentration of prep. blank below the negative CRDL? | | X | |
| Form IV (ICP Interference Check Sample) | | | |
| Present and complete? | | | X |
| Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | | | X |
| Are all Interference Check Sample results inside the control limits (±20%)? | | | X |
| If no, is concentration of AI, Ca, Fe, or Mg lower than the respective concentration in ICS? | | | X |
| Form V A (Spiked Sample Recovery - Pre-Digestion/P | re-Distil | <u>lation)</u> | |
| Present and complete for: | | | |
| each SDG? | X | | |
| each matrix type? | X | | |
| Was field blank used for spiked sample? | | X | |
| Are all recoveries within control limits (75-125)? | | X | |
| If no, is sample concentration greater than or equal to four times spike concentration? | | X | |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | X | | |
| Are any spike recoveries: | | | |
| less than 10%? | | X | |
| between 10-74%? | X | | |
| between 126-200%? | | × | |
| greater than 200%? | | X | |
| Form VI (Lab Duplicates) | | | <u></u> |
| Present and complete for: | | | |
| each SDG? | X | | |
| | | | |

Inorganic Data Validation Checklist - Page 5

| | YES | NO | NA |
|---|-----|---------------|-------------|
| each matrix type? | X | | |
| Was field blank used for duplicate analysis? | | X | |
| Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | × | | |
| If no, are all results outside the control limits flagged with an * on Form I's and VI? | | | X |
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%? | | X | |
| Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL? | | | X |
| Form VII (Laboratory Control Sample) | | | · · · · · · |
| Was one LCS prepared and analyzed for: | | | |
| each SDG? | X | | |
| each batch samples digested/distilled? | X | | |
| Is LLCS "Found" value higher than the control limits on Form VII? | | X | |
| Is LCS "Found" lower than the control limits on Form VII? | | X | |
| Form IX (ICP Serial Dilution) | | | |
| Was Serial Dilution analysis performed for: | | | |
| each SDG? | | | X |
| each matrix type? | | | X |
| Was field blank(s) used for Serial Dilution Analysis? | | \. | X |
| Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration of Form IX is equal to 50 times IDL or greater. | | | × |
| Are any % difference values: | | | |
| > 10%? | | | X |
| ≥100%? | | | X |
| Furnace Atomic Absorption (AA) QC Analysis | | | |
| Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA? | | | X |

Inorganic Data Validation Checklist - Page 6

| | YES | NO | NA NA |
|--|------|----|-------------|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| Is analytical spike recovery outside the control limits (85-115%) for any sample? | | | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | X | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | X |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | X |
| <u>Field Blank</u> | | | |
| ls field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | Х |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | X | | |
| all the instruments used? | X | | |

Inorganic Data Validation Checklist - Page 7

| | YES | NO | NA |
|---|-----|----------|-------|
| is IDL greater than CRDL for any analyte? | | <u>X</u> | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | | | X |
| Was any sample result higher linear range of ICP. | | | X |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | X | |
| If yes for any of the above, was the sample diluted to obtain the result on Form 1? | | | X |
| | | | - |

Corrected Sample Analysis Data Sheets

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| | | | • | | ANALISES DATA S | | | , |
|---------|-------|----------------|------------------|--|-----------------|-----|------------|-----------------|
| ي Nan | ne: 1 | AQUATEC | | | Contract: 93 | 108 | 2 | K40169F |
| | | | | | | | | SDG No.: 39955 |
| atrix | (so | _ il/water; | : FISH | _ | | La | b Samp | le ID: 216157 |
| evel (| (low, | /med): | LOW_ | _ | | Da | te Rec | eived: 10/07/93 |
| Solid | ds: | | 100. | o | | | | |
| | | Concent | cration | Units (ug | /L or mg/kg dry | , w | eight) | : MG/KG |
| | | CAS | No. | Analyte | Concentration | С | Q | м |
| | | 740 | | ************************************** | | _ | | NR |
| | | | 9-90-5 0-36-0 | Aluminum_ Antimony_ | | - | | NR NR |
| | | |)-38-2 | Arsenic | | - | | NR |
| | | | | Barium — | | - | | NR |
| | | | | Beryllium | | - | | NR |
| | | | | Cadmium | | - | | NR |
| | | | | Calcium | | 1-1 | | NR |
| | | | | Chromium | | - | | NR |
| | | 1 - | | Cobalt | | - | | NR |
| | | | | Copper | | 1-1 | | NR |
| | | | | Iron | | - | | NR |
| | | | | Lead | | 1-1 | | NR |
| | | | | Magnesium | | - | | NR |
| | | | | Manganese | | - | | NR |
| | | | | Mercury | 0.10 | 1-1 | <u>7</u> N | CV |
| | | | | Nickel - | | - | | NR |
| | | | | Potassium | | 1-1 | | NR |
| | | | | Selenium | | - | | NR |
| | | | | Silver | | - | | NR |
| | | | | Sodium | | - | | NR |
| | | | | Thallium | | 1-1 | | NR |
| | | | | Vanadium - | | - | | NR |
| | | 7440 | 0-66-6 | Zinc | | - | | NR |
| | | | | Cyanide | | - | | NR |
| | | | | | | | |]_ |
| olor I | Befor | re: | | Clari | ty Before: | | _ | Texture: |
| olor A | After | r: | | Clari | ty After: | | _ | Artifacts: |
| comment | ts: | | | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| | | Lab Code: AQUAI_ Case No.: BIO_ SAS No.: | | | | | | |
|------------------|--------------------|--|----------------|----------|---------|----------------|--|--|
| atrix (soil/wate | r): FISH_ | - | | Lab | Sampl | e ID: 216159 | | |
| evel (low/med): | LOW | - | | Dat | e Rece | ived: 10/07/93 | | |
| Solids: | 100.0 |) | | | | | | |
| Conce | ntration | Units (ug/ | L or mg/kg dry | y we | ight): | MG/KG | | |
| CA | S No. | Analyte | Concentration | С | Q | м | | |
| 7.4 | 30 00 5 | 3 3 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | | - - | | NR | | |
| I I | 29-90-5 40-36-0 | Antimony | | - - | | NR NR | | |
| | | Arsenic Arsenic | | - - | | NR | | |
| | 40-39-3 | Barium | | - - | | NR | | |
| | | Beryllium | | - - | | NR | | |
| | | Cadmium | | - - | | NR | | |
| | 40-70-2 | Calcium | | - - | | NR | | |
| | | Chromium | | - - | | NR | | |
| 74 | | Cobalt - | | - - | | NR | | |
| | | Copper | | - - | | NR | | |
| | | Iron — | | - - | | NR | | |
| 74 | 39-92-1 | Lead | | - - | | NR | | |
| 74 | 39-95-4 | Magnesium | | <u> </u> | | NR | | |
| 74 | 39-96-5 | Manganese | | - - | | NR | | |
| 74 | 39-97-6 | Mercury | 0.09 | | N | CV | | |
| 74 | 40-02-0 | Nickel | | 1-1- | | NR | | |
| 74 | 40-09-7 | Potassium | | | | NR | | |
| | | Selenium | | 1 = 1 = | | NR | | |
| ľ | | Silver | | | | NR | | |
| | 40-23-5 | Sodium | | 1212 | | NR | | |
| | | Thallium_ | | I = I = | | NR | | |
| | | Vanadium_ | | | | NR | | |
| 74 | 40-66-6 | Zinc | | _ _ | | NR | | |
| | | Cyanide | | - - | | NR | | |
| olor Before: | | Clarit | ty Before: | | · | Texture: | | |
| olor After: | | Clarit | ty After: | | | Artifacts: | | |
| omments: | | | | | | | | |
| | | | | | <u></u> | | | |
| | | | · | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| Color After: Artifacts: | _b Name: AQUA | TEC | | Contract: 91 | L082 | K40179F |
|---|--|-------------|------------|-----------------|--------------|---|
| Date Received: 10/08/93 Solids: 100.0 Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | | | se No.: BI | O SAS No.: | | SDG No.: 39955_ |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | Matrix (soil/w | ater): FISH | _ | | Lab Samp | le ID: 216161 |
| Cas No. | Level (low/med |): LOW_ | _ | | Date Rec | eived: 10/08/93 |
| CAS No. | % Solids: | 100. | 0 | | | |
| T429-90-5 | Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| T429-90-5 | | | | | | |
| 7440-36-0 | | CAS No. | Analyte | Concentration | CQ | M |
| 7440-36-0 | | 7429-90-5 | Aluminum | | - | · NR |
| 7440-38-2 | | | | | - | |
| T440-39-3 | | | | | - | |
| 7440-43-9 | | | | | - | |
| 7440-43-9 | | | | | | NR |
| 7440-47-3 | | | | | - | |
| 7440-48-4 | | 7440-70-2 | Calcium | | - | |
| 7440-50-8 | | 7440-47-3 | Chromium | | - | NR |
| 7439-89-6 | | 7440-48-4 | Cobalt - | | | NR |
| 7439-89-6 | | | | | | NR |
| 7439-95-4 | | | | | | ' NR |
| 7439-96-5 | | 7439-92-1 | Lead | | - | NR |
| 7439-97-6 | | 7439-95-4 | Magnesium | | - | NR |
| 7439-97-6 | | | | | | NR |
| 7440-02-0 | | | | | - <u>TN</u> | - cv |
| 7782-49-2 | | | | | - | NR |
| 7440-22-4 | | 7440-09-7 | Potassium | | | NR |
| 7440-22-4 | | 7782-49-2 | Selenium | | - | NR |
| 7440-28-0 | | 7440-22-4 | Silver - | | - | - NR |
| 7440-62-2 Vanadium | | 7440-23-5 | Sodium | | - | NR NR |
| 7440-62-2 Vanadium | | 7440-28-0 | Thallium | | - | - NR |
| 7440-66-6 Zinc NR NR Cyanide Texture: Color Before: Clarity Before: Artifacts: | | | | | - | - NR |
| Color Before: Clarity Before: Texture: Color After: Clarity After: Artifacts: | | | | | | - NR |
| Color After: Clarity After: Artifacts: | | | Cyanide | | | NR |
| Color After: Clarity After: Artifacts: | | l | l | l | _ | _ |
| | Color Before: | | Clari | ty Before: | | Texture: |
| Comments: | Color After: | | Clari | ty After: | | Artifacts: |
| | Comments: | | | | | |
| | | | | | | |
| | ************************************** | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| ے Name: AQUA | TEC | | Contract: 91 | L08 | 2 | K40180F |
|----------------|-------------------|---------------------|-----------------|--|-------------|-----------------|
| Lab Code: AQUA | I Ca: | se No.: BI | O SAS No.: | : _ | | SDG No.: 39955_ |
| Matrix (soil/w | _ vater): FISH | _ | | La | b Sampl | e ID: 216163 |
| evel (low/med | l): LOW_ | _ | | Da | te Rece | ived: 10/08/93 |
| Solids: | 100. | 0 | | | | |
| ' | ncentration | Units (ug | /L or mg/kg dry | , w | eight): | MG/KG |
| | | | | | | |
| | CAS No. | Analyte | Concentration | C | Q | M |
| | 7429-90-5 | Aluminum | | - | | NR |
| | 7440-36-0 | Antimony_ | | | | NR |
| | • | Arsenic | | 1–1 | | NR |
| | | Barium Beryllium | | 1-1 | | NR NR |
| | | Cadmium | | - | | NR |
| | | Calcium | | - | | NR |
| | | Chromium | | - | | NR |
| | | Cobalt | | - | | NR |
| | 7440-50-8 | Copper | | <u> </u> | | NR |
| | | Iron | | | | NR |
| | | Lead | | 1_1 | | NR |
| | | Magnesium | | 1-1 | | NR |
| | | Manganese | | - | | NR |
| | | Mercury Nickel | 0.10 | 1-1 | <u></u> | CV NR |
| | | Potassium | | - | | NR |
| | | Selenium | | - | | NR |
| | | Silver | | - | | NR |
| | | Sodium | | - | | NR |
| | | Thallium | | - | | NR |
| | 7440-62-2 | Vanadium_ | | - | | NR |
| | 7440-66-6 | Zinc - | | - | | NR |
| | | Cyanide | | | | NR |
| | | | | 1_1 | | l <u> </u> |
| olor Before: | | Clari | ty Before: | | _ | Texture: |
| color After: | | Clari | ty After: | | _ | Artifacts: |
| Comments: | | | | | | |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQUA | rec | | Contract: 91 | 108 | 2 | R401611 |
|--------------|-------------|-------------------|-----------------|----------|-------------|-----------------|
| | | | | | | SDG No.: 39955 |
| trix (soil/w | ater): FISH | _ | | La | b Sampi | le ID: 216165 |
| vel (low/med |): LOW_ | _ | | Da | te Rec | eived: 10/08/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - - | | NR |
| | | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic | | | | NR |
| | | Barium | | | | NR |
| | | Beryllium | | _ | | NR |
| | 1 | Cadmium | | - | | NR NR |
| | | Calcium | | - | | NR NR |
| | 1 | Cobalt | | - | | NR |
| | | Copper | | [-[| | NR |
| | | Iron — | | - | | NR |
| | | Lead | | - | | NR |
| | | Magnesium | | - | | NR |
| | 7439-96-5 | Manganese | | | | NR |
| | | Mercury | 0.23 | | N | CV |
| • | | Nickel | | $ \bot $ | | NR |
| | | Potassium | | 1_1 | | NR |
| | | Selenium_ | | _ | | NR |
| | | Silver Sodium | | - | | NR NR |
| | | Thallium | | - | | NR |
| | | Vanadium_ | | - | | NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | | Cyanide | | 1-1 | | NR |
| | | | | | | |
| lor Before: | | Clari | ty Before: | 4 | • | Texture: |
| lor After: | | Clari | ty After: | | - | Artifacts: |
| mments: | | | | | | |
| 4 | | | | | | |
| | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

| _⊿b Name: AQUA | TEC | | Contract: 91 | 1082 | K40182F |
|----------------|------------------------|---------------------------------------|-----------------|----------------|-----------------|
| | <u> </u> | | | | SDG No.: 39955_ |
| Matrix (soil/w | ater): FISH | - | | Lab Sample | E ID: 216167 |
| Level (low/med |): LOW_ | _ | | Date Rece | ived: 10/08/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | |
| | 7400 00 5 | | | | NO. |
| | 7429-90-5 7440-36-0 | Aluminum_ Antimony | | | NR NR |
| | 7440-38-2 | Arsenic | | | NR |
| · | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | | | | nr |
| | 7440-70-2 | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | 7440-48-4 | | | | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 7439-96-5 | Magnesium | | | NR NR |
| | 7439-96-5 | Manganese | 0.09 | - | CV |
| | 7440-02-0 | Mercury Nickel | | | NR |
| | 7440-02-0 | | | | NR |
| | 7782-49-2 | | | | NR |
| | 7440-22-4 | | l | - | NR |
| | 7440-23-5 | · · · · · · · · · · · · · · · · · · · | | - | NR |
| | 7440-28-0 | Thallium | | - | NR |
| | 7440-62-2 | Vanadium - | | - | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | | NR |
| | l | i | i | l_ll | (|
| Color Before: | | Clari | ty Before: | • | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

INORGANIC ANALYSES DATA SHEET EPA SAMPLE NO.

| o Name: AQUA | rec | | Contract: 9 | 1082 | K40183F |
|-----------------|---------------------------------------|-----------------------|-----------------|--|-----------------|
| | | | | | SDG No.: 39955_ |
| Matrix (soil/wa | ater): FISH | _ | | Lab Sampl | e ID: 216169 |
| Level (low/med) |): LOW_ | _ | | Date Rece | eived: 10/08/93 |
| Solids: | 100. | 0 | | | |
| Cor | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyto | Concentration | c Q | M |
| | CAS NO. | Midlyce | Concentracion | | H |
| | 7429-90-5 | | | | NR |
| | 7440-36-0 | Antimony_ | | | NR |
| | | Arsenic | | _ | NR |
| | | Barium | | - | NR |
| | | Beryllium | | - | NR |
| | 7440-43-9 | | | - | NR |
| | 7440-70-2 | | | - | NR |
| | | Chromium_ | | | NR |
| | 7440-48-4 | | | - | NR |
| | 7440-50-8 | Copper | | - | NR |
| | | Iron | | - | NR |
| | | Lead | | - | NR |
| - | | Magnesium | | | NR |
| | | Manganese | | - | NR |
| | 7439-97-6 | Mercury | 0.22 | - Z _M - | CV |
| | | Nickel | | | NR |
| | | Potassium | i | - | NR |
| | 7782-49-2 | | | - | NR |
| | 7440-22-4 | | | - | NR |
| | | Sodium | | | NR NR |
| | | Thallium_ Vanadium | | - | NR NR |
| | 7440-62-2 7440-66-6 | Zinc | | | NR NR |
| | 7440-66-6 | | | - | NR NR |
| | | Cyanide | | - | INK |
| | | | l | l <u>-</u> l | 11 |
| Color Before: | | Clari | ty Before: | <u>. </u> | Texture: |
| Color After: | | Clari | ty After: | ··· | Artifacts: |
| Comments: | | | | | |
| | | | | | |
| | · · · · · · · · · · · · · · · · · · · | | | | |
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FORM I - IN

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| | | | | | - | |
|----------------|------------------------|-------------|-------------------|--------------|-------------|-------------------|
| ab Name: AQUA | ATEC | | Contract: 91 | L082 | | K40184F |
| Lab Code: AQUI | AI Ca | se No.: BI | SAS No.: | | | SDG No.: 39955 |
| Matrix (soil/w | _ | | | - | | le ID: 216171 |
| oval (lov/mo | al. tow | | | Dat | e Pece | eived: 10/08/93 |
| Level (low/med | 1). DOW_ | _ | | Dat | e Rece | ; i ved: 10/08/95 |
| Solids: | 100. | 0 | | | | |
| C | ngontration | IInite (ne | /L or mg/kg dry | r 1.10 | i~h+l | MC/YC |
| C | Ducentracton | onics (ug | The or may ka ary | y we | igne). | , MG/ NG |
| | | T | | | | |
| | CAS No. | Analyte | Concentration | C | Q | М |
| | 7429-90-5 | Aluminum | | - - | | NR |
| | 7440-36-0 | Antimony | | - - | | NR |
| | 7440-38-2 | Arsenic | | - - | | NR |
| | 7440-39-3 | Barium | | - - | | NR |
| | 7440-41-7 | | | - - | | NR |
| | 7440-43-9 | | | - - | | NR |
| | 7440-70-2 | Calcium | | - - | | NR |
| | 7440-47-3 | Chromium | | <u> </u> | | NR |
| | 7440-48-4 | Cobalt | | | | NR |
| | 7440-50-8 | Copper | | | | NR |
| | 7439-89-6 | Iron | | _ _ | | NR |
| | 7439-92-1 | Lead | |]_ _ | | NR |
| | 7439-95-4 | | | _ _ | | NR |
| | 7439-96-5 | Manganese | | _ _ | | NR |
| | 7439-97-6 | Mercury_ | 0.20 | 1-12 | и | CV |
| | 7440-02-0 | Nickel | | - - | | NR |
| | 7440-09-7 7782-49-2 | | | - - | | NR NR |
| | 7440-22-4 | | | - - | | NR NR |
| | 7440-23-5 | <u> </u> | | - - | | NR |
| | 7440-28-0 | Thallium | | - - | | NR |
| | 7440-62-2 | Vanadium | l | - - | | NR |
| | 7440-66-6 | Zinc | | - - | | NR |
| | | Cyanide | | 1-1- | | NR |
| | | \ <u> </u> | | 1_1_ | | |
| Color Before: | | Clari | ty Before: | | | Texture: |
| Color After: | | Clari | ty After: | | | Artifacts: |
| | | | <u> </u> | | | |
| Comments: | | | | | | |
| | | | | _ | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

| ى Name: AQUAT | EC | | Contract: 91 | 1082 | K40185F |
|-----------------|------------------------|--------------|------------------|------------|-----------------|
| Lab Code: AQUAI | Cas | se No.: BIO | SAS No.: | · | SDG No.: 39955_ |
| Matrix (soil/wa | ter): FISH | _ | | Lab Sampl | e ID: 216173 |
| Level (low/med) | : LOW | | | Date Rece | eived: 10/08/93 |
| | 100.0 | _ | | | |
| | | | /L or mg/kg dry | . weight): | MG /KG |
| COI | | onics (ug) | The or mg/kg dry | weight). | — ı |
| | CAS No. | Analyte | Concentration | c Q | M |
| | 7429-90-5 | | | - | NR |
| | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | _ | NR NR |
| | 7440-39-3 7440-41-7 | Beryllium | | - | NR NR |
| | 7440-43-9 | Cadmium | | [-[| NR |
| | 7440-70-2 | Calcium | | - | NR |
| | 7440-47-3 | Chromium_ | | | NR |
| | 7440-48-4 | Cobalt | | _ | NR |
| | 7440-50-8 | Copper | | - | NR |
| | 7439-89-6 7439-92-1 | Iron Lead | | - | NR NR |
| | 7439-92-1 | Magnesium | | - | NR |
| | 7439-96-5 | Manganese | | - | NR |
| | 7439-97-6 | Mercury | 0.13 | JN | CV |
| | 7440-02-0 | Nickel | | | NR |
| | 7440-09-7 | Potassium | | | NR |
| | 7782-49-2 | Selenium_ | | | NR |
| | 7440-22-4 7440-23-5 | Silver | | - | NR |
| | 7440-23-5 | Sodium | | - | NR NR |
| , | 7440-28-0 | Vanadium_ | | - | NR |
| | 7440-66-6 | Zinc | | - | NR |
| | | Cyanide | | - | NR |
| | | | | | |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| .b Name: AQU | ATEC | | Contract: 91 | 108 | 2 | K40186F | • |
|----------------|--------------|--------------|-----------------|------------|-------------|---------------|------|
| Lab Code: AOU | AI Ca | se No.: BI | O SAS No.: | : | | SDG No.: 3 | 995 |
| | _ | | | | | | |
| Matrix (soil/ | water): FISH | - | | La | D Samp | ole ID: 21617 | 5 |
| Level (low/med | d): LOW | | | Da | te Rec | eived: 10/08 | 3/93 |
| • | _ | _ | | | | · | • |
| Solids: | 100. | 0 | | | | | |
| C | oncentration | Units (ug | /L or mg/kg dry | , w | eight) | : MG/KG | |
| | | | | | | | |
| | CAS No. | 3 ma 3 set a | Concentration | | | M | |
| | CAS NO. | Analyte | Concentration | 14 | Q | M | |
| | 7429-90-5 | Aluminum | | - | | - NR | |
| | 7440-36-0 | Antimony | | - | | NR | |
| | 7440-38-2 | Arsenic | l ———— | — | | NR | |
| | 7440-39-3 | Barium | | - | | NR | |
| | | Beryllium | | 1-1 | | NR | |
| | | Cadmium | | - | | - NR | |
| | | Calcium | J | - | | - NR | |
| | 7440-47-3 | Chromium |] | 1-1 | | NR | |
| | | Cobalt | | - | | - NR | |
| | 7440-50-8 | Copper |] | | | - NR | |
| | | Iron | | 1-1 | | - NR | |
| | 7439-92-1 | Lead | | 1-1 | | - NR | |
| | 7439-95-4 | Magnesium | <u> </u> | 1-1 | | - NR | |
| | 7439-96-5 | Manganese | | 1-1 | | - NR | |
| | 7439-97-6 | | 0.16 | - | | - CV | |
| | 7440-02-0 | Mercury | 0.16 | - | <u></u> N | - NR | |
| | 1 | | l | - | | | |
| | 7440-09-7 | Potassium | | - | | NR | |
| | 7782-49-2 | Selenium_ | | _ | | NR | |
| | 7440-22-4 | Silver | | | | NR | |
| | 7440-23-5 | Sodium | | | | NR | |
| | 7440-28-0 | Thallium | | _ | | NR | |
| | 7440-62-2 | Vanadium_ | | 1-1 | | NR | |
| | 7440-66-6 | Zinc | | 1_1 | | NR | |
| | | Cyanide | | - | | NR | |
| | l | · | l | 1_1 | | _!! | |
| Color Before: | | Clari | ty Before: | | • | Texture: | |
| Color After: | | Clari | ty After: | | - | Artifacts: | |
| Comments: | | | | | | | |
| | | | | | | | |
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FORM I - IN

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| ച Name: AQUA | TEC | | Contract: 91 | 108 | 2 | K40187F | |
|---------------|------------------------|--------------------|-----------------|------------|--------|----------------|-----|
| ab Code: AOUA | .I Ca | se No.: BIO | SAS No.: | ; | | SDG No.: 399 | 955 |
| trix (soil/w | _ | | | | | le ID: 216177 | • |
| • | • | | | | | | |
| vel (low/med | l): LOW_ | _ | | Da | te Rec | eived: 10/08/9 | 93 |
| Solids: | 100. | 0 | | | | | |
| Cc | ncentration | Units (ug. | /L or mg/kg dry | 7 W | eight) | : MG/KG | |
| | 1 | 1 | | | | | |
| | CAS No. | Analyte | Concentration | c | Q | M | |
| | 7429-90-5 | Aluminum | | - | | - NR | |
| | 7440-36-0 | | | - | | NR | |
| | | Arsenic | | | | NR | |
| | 7440-39-3 | | | | | NR | |
| | 7440-41-7 | | | | | NR | |
| | 7440-43-9 | | | 1=1 | | NR | |
| | 7440-70-2 | | | | | NR | |
| | 7440-47-3 | | | | | NR | |
| | 7440-48-4 | | | | | NR | |
| | | Copper | | | | NR | |
| | _ | Iron | | $ \bot $ | | NR | |
| | 7439-92-1 | | | _ | | NR | |
| | 7439-95-4 | | | _ | | NR | |
| | | Manganese | | - | | NR | |
| | | Mercury_ | 0.26 | _ | N | cv | |
| | | Nickel | | _ | | NR | |
| | 7440-09-7 | | | _ | | NR | |
| | | Selenium_ | | _ | | NR | |
| | 7440-22-4 | | | _ | | NR | |
| | | Sodium | | 1-1 | | NR | |
| | 7440-28-0 | | | [_] | | NR | |
| | 7440-62-2 7440-66-6 | Vanadium_ Zinc | | - | | NR NR | |
| | /440-66-6 | Cyanide | | - | | - NR | |
| | | | | | | | |
| lor Before: | | Clari | ty Before: | | _ | Texture: _ | |
| lor After: | | Clari | ty After: | | _ | Artifacts: _ | |
| mments: | | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| .b Name: AQUA | TEC | | Contract: 91 | 108: | 2 | K40188F |
|---------------|------------------------|-----------------------|-----------------|---------------|---------|----------------|
| ab Code: AQUA | I Ca | se No.: BI | SAS No.: | : | | SDG No.: 39955 |
| | | | | | | |
| atrix (soil/w | ater): rism | | | ופת | o sampı | e ID: 216179 |
| evel (low/med |): LOW_ | _ | | Dat | te Rece | ived: 10/08/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | M |
| | 7429-90-5 | 77: | | _ - | | NR |
| | 7440-36-0 | Antimony | | \ - - | | NR NR |
| | 7440-38-2 | Arsenic | | [-[- | | NR |
| | 7440-39-3 | Barium | | - - | | NR |
| | 7440-41-7 | Beryllium | |]- - | | NR |
| | 7440-43-9 | Cadmium | | - : | | NR |
| | 7440-70-2 | Calcium | | - | | NR |
| | 7440-47-3 | Chromium_ | | | | NR |
| | 7440-48-4 | Cobalt | | | | NR |
| | 7440-50-8 | Copper | | | | NR |
| | 7439-89-6 | Iron | |]_[| | NR |
| | 7439-92-1 | Lead | |]_[. | | NR |
| | | Magnesium | | _ . | | NR |
| | 7439-96-5 | Manganese | | _ . | | NR |
| | 7439-97-6 | Mercury | 0.20 | 1_[: | | CV |
| | 7440-02-0 | Nickel | | _ . | | NR |
| | 7440-09-7 | Potassium | | _ . | | NR |
| | 7782-49-2 | Selenium_ | | _ . | | NR |
| | 7440-22-4 | Silver | \ | _\. | | NR |
| | 7440-23-5 | Sodium | [| [-] | | NR |
| | 7440-28-0 | Thallium_ Vanadium | | - · | | NR |
| | 7440-62-2 7440-66-6 | Zinc | | | | NR NR |
| | 7440-00-0 | Cyanide | [| 1-1 | | NR |
| | | Cyanitae | | | | |
| olor Before: | | Clari | ty Before: | | | Texture: |
| olor After: | | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | INORGANIC A | ANALYSES DATA S | SHEET | , |
|-----------------|------------------------|----------------------|-----------------|----------------------|--------------------------|
|) Name: AQUA | TEC | | Contract: 91 | 1082 | K40189F |
| Lab Code: AOUA | T Ca: | se No.: BIG | SAS No.: | ! | SDG No.: 39955_ |
| | _ | | | | |
| Matrix (soil/wa | ater): FISH | - | | Lab Sam | ple ID: 216181 |
| Level (low/med |): LOW_ | | | Date Re | eceived: 10/08/93 |
| % Solids: | 100. | 0 | | | |
| Co: | ncentration | Units (ug | /L or mg/kg dry | / weight | :): MG/KG |
| | 1 | | 1 | | · · · |
| | CAS No. | Analyte | Concentration | C Q | M |
| | 7429-90-5 | Aluminum | | - | $- _{\overline{ m NR}} $ |
| • | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| • | 7440-39-3 | Barium | | | NR NR |
| | 7440-41-7 7440-43-9 | Beryllium Cadmium | [] | - | NR NR |
| | 7440-70-2 | Calcium | | | |
| | 7440-47-3 | Chromium | | | - NR |
| | 7440-48-4 | Cobalt | | - | - NR |
| | 7440-50-8 | Copper | | - | - NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | <u>-</u> | NR |
| | 7439-96-5 | Manganese | | - = ,, - | NR |
| | 7439-97-6 7440-02-0 | Mercury | 0.21 | _\ <u>_</u> N | CV NR |
| | 7440-02-0 | Potassium | | - | $- \mathbf{NR} $ |
| | 7782-49-2 | Selenium | | - | - NR |
| | 7440-22-4 | | | - | - NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium | | | - NR |
| | 7440-62-2 | | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | - | NR NR |
| Color Before: | | Clari | ty Before: | ! ! | Texture: |
| Color After: | | | ty After: | | Artifacts: |
| Comments: | | | • | | |
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FORM I - IN

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| _ab Name | : AQUAT | PEC | | Contract: 91 | 1082 | K40258F |
|-------------|------------|---------------------------------------|---------------------------------------|-----------------|----------------|-----------------|
| Lab Code | : AQUAI | Cas | se No.: BI | O SAS No.: | | SDG No.: 39955_ |
| Matrix (| soil/wa | ter): FISH | _ | | Lab Sampl | e ID: 216187 |
| Level (1 | ow/med) | : LOW_ | _ | | Date Rece | ived: 10/13/93 |
| % Solids | : : | 100.0 |) | | | |
| | Cor | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | 1 | CAS No. | Analysta | Concentration | | <u>m</u> |
| | | | | Concentration | | |
| | j | 7429-90-5 | | | | NR |
| | | 7440-36-0 | Antimony_ | | | NR |
| | | 7440-38-2 7440-39-3 | Arsenic Barium | | | NR NR |
| | | 7440-41-7 | · · · · · · · · · · · · · · · · · · · | | | NR |
| | | 7440-43-9 | | | | NR |
| | | 7440-70-2 | | | | NR |
| | ĺ | 7440-47-3 | | | | NR |
| | | 7440-48-4 | | | | NR |
| | | 7440-50-8 | Copper | | | NR |
| | | 7439-89-6 | Iron | | | NR |
| | | 7439-92-1 | Lead | | | NR |
| | ļ | 7439-95-4 | | | - | NR |
| | | 7439-96-5 | Manganese Mercury | 0.17 | - | NR CV |
| | | 7439-97-6 7440-02-0 | Nickel - | 0.17 | _ \N | NR |
| | | 7440-02-0 | Potassium | | - | NR |
| | | 7782-49-2 | Selenium | | - | NR |
| | Į | 7440-22-4 | | | - | NR |
| | | 7440-23-5 | | | - | NR |
| | | 7440-28-0 | Thallium | | - | NR |
| | | 7440-62-2 | Vanadium_ | | | NR |
| | Į. | 7440-66-6 | Zinc | | | NR |
| | | | Cyanide | | | NR |
| | l | | | <u> </u> | l_ll | |
| Color Be | efore: | | Clari | ty Before: | | Texture: |
| Color Af | ter: | | Clari | ty After: | | Artifacts: |
| Comments | s: | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

| Lab Code: AQUAI | 9 F | K402591 | _ | 32 | 108 | Contract: 91 | | EC | AQUA: | me: | Na | .b |
|---|------------|-------------|--|----------------|-----|---------------------|--------------|------------|--------|------|------|-----|
| Level (low/med): LOW Date Received: 10/1 | 39955 | SDG No.: | _ s | | : _ | O SAS No.: | se No.: BIO | _ Ca | AQUA | de: | C | Lab |
| Cas No. | 189 | ID: 21618 | mple | ıb Sar | La | _ | | ter): FISH | oil/wa | (so | rix | lat |
| Cas No. | 13/93 | ved: 10/1: | eceiv | ite Ro | Da | | | : LOW | ⊌/med\ | (10) | re l | ev |
| CAS No. | , | | | | | | _ | | .,, | · | | |
| CAS No. | | | | | | | 0 | 100. | | .ds: | oli | S |
| T429-90-5 | | MG/KG | t): M | reight | , w | /L or mg/kg dry | Units (ug) | centration | Cor | | | |
| 7440-36-0 Antimony NR 7440-38-2 Arsenic NR 7440-43-9 Barium NR 7440-41-7 Beryllium NR 7440-43-9 Cadmium NR 7440-47-3 Chromium NR 7440-48-4 Cobalt NR 7439-89-6 Iron NR 7439-95-1 Lead NR 7439-95-4 Magnesium NR 7439-97-6 Mercury 0.07 NR 7440-02-0 Nickel NR 7440-09-7 Potassium NR 7440-22-4 Silver NR 7440-28-0 Thallium NR 7440-66-6 Zinc NR | | _ | м | Q | С | Concentration | Analyte | CAS No. | | | | |
| 7440-36-0 Antimony NR 7440-38-2 Arsenic NR 7440-39-3 Barium NR 7440-41-7 Beryllium NR 7440-43-9 Cadmium NR 7440-70-2 Calcium NR 7440-48-4 Cobalt NR 7439-89-6 Iron NR 7439-92-1 Lead NR 7439-95-4 Magnesium NR 7439-97-6 Mercury 0.07 NR 7440-02-0 Nickel NR 7440-09-7 Potassium NR 7440-22-4 Silver NR 7440-23-5 Sodium NR 7440-28-0 Thallium NR 7440-66-6 Zinc NR | | 5 | _{\$\overline{\pi_0}\overline} | | _ | | 27000000 | 7420-00-5 | | | | |
| 7440-38-2 | | | | | - | | | | | | | |
| T440-39-3 | | | | | - | | | | | | | |
| 7440-41-7 Beryllium NR NR NR 7440-43-9 Cadmium NR NR NR NR NR NR NR N | | | | | 1-1 | | | | | | | |
| 7440-43-9 7440-70-2 7440-47-3 7440-48-4 Cobalt 7440-50-8 7439-89-6 7439-95-4 Magnesium 7440-02-0 NR NR NR NR NR NR NR NR NR NR NR NR NR | | | | | - | | | | | | | |
| 7440-70-2 Calcium NR NR 7440-47-3 Chromium NR NR NR 7440-50-8 Copper NR NR NR 7439-92-1 Lead NR NR 7439-95-4 Magnesium NR NR NR 7439-97-6 Manganese NR 7440-02-0 Nickel NR 7782-49-2 Selenium NR NR 7740-22-4 Silver NR 7440-23-5 Sodium NR 7440-66-6 Zinc NR NR NR NR 7440-66-6 Zinc NR NR NR NR NR NR NR N | | | | | - | | | | | | | |
| 7440-47-3 | | | | | - | | | | | | | |
| 7440-48-4 | | | | | 1-1 | | | | 1 | | | |
| 7440-50-8 7439-89-6 1ron 7439-92-1 1ead NR 7439-95-4 Magnesium NR 7439-96-5 Manganese Mercury NR 7440-02-0 Nickel Potassium NR 7782-49-2 Selenium NR 7440-22-4 Silver NR 7440-23-5 Sodium NR NR NR NR NR NR NR NR NR NR NR NR NR | | | | | - | | | | | | | |
| 7439-89-6 Iron | | | | | - | | | | | | | |
| 7439-92-1 Lead NR NR NR NR NR NR NR N | | | | | 1-1 | | | | | | | |
| 7439-95-4 Magnesium 7439-96-5 Manganese 7439-97-6 Mercury 7440-02-0 Nickel 7440-09-7 Potassium 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-28-0 Thallium 7440-62-2 Vanadium 7440-66-6 Zinc | | | | | - | | | | | | | |
| 7439-96-5 Manganese 7439-97-6 Mercury 0.07 7440-02-0 Nickel NR 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-28-0 Thallium 7440-62-2 Vanadium 7440-66-6 Zinc | | | | | - | · [[| | | | | | |
| 7440-02-0 Nickel | | | | | - | | | | | | | |
| 7440-02-0 Nickel NR NR NR NR NR NR NR N | | | | - N | - | | | | | | | |
| 7440-09-7 Potassīum 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-28-0 Thallium 7440-62-2 Vanadium 7440-66-6 Zinc | | | | | - | | | | | | | |
| 7782-49-2 Selenium | | | | | - | | | | | | | |
| 7440-22-4 Silver | | | | | - | | | | | | | |
| 7440-23-5 Sodium | | | | | - | | | | 1 | | | |
| 7440-28-0 Thallium | | | | | - | | | | | | | |
| 7440-62-2 Vanadium | | | | | - | | | | | | | |
| 7440-66-6 Zinc | | | | l | - | | | | | | | |
| Cyanide NR | | | | | - | | | | ļ | | | |
| | | R | _ NP | | - | | Cyanide_ | | | | | |
| ! ————— I ————— I ————— I — I ———— I — I | | _1 | I | l | ا_ا | . | l | | ! | | | |
| Color Before: Clarity Before: Texture: | | exture: | T€ | _ | | ty Before: | Clarit | | ore: | Befo | or | Col |
| Color After: Clarity After: Artifacts | ;: | rtifacts: | Ar | _ | | ty After: | Clarit | | er: | Afte | or | Col |
| Comments: | | | | | | | | | | its: | mei | Com |
| | | | | | | | | | | | | |

I EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| _b Name: AQU | ATEC | | Contract: 91 | L082 | K40260F |
|---------------|------------------------|----------------------|---------------------------------------|--------------------------|-----------------------|
| Lab Code: AQU | 'AI Ca | se No.: BI | SAS No.: | | SDG No.: 39955 |
| Matrix (soil/ | _ | | | | - mple ID: 216191 |
| | • | - | | | |
| Level (low/me | d): LOW_ | - | | Date Re | eceived: 10/13/93 |
| % Solids: | 100. | 0 | | | |
| С | oncentration | Units (ug | /L or mg/kg dry | y weight | t): MG/KG |
| | CAS No. | Analyte | Concentration | c Q | м |
| | 7429-90-5 | Aluminum | | | $- _{\overline{NR}} $ |
| | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 7440-43-9 | Beryllium Cadmium | | - | NR NR |
| | 7440-70-2 | Calcium | | - | - NR |
| | 7440-47-3 | Chromium | | - | - NR |
| | | Cobalt | | [-[| - NR |
| | 7440-50-8 | Copper | | - | NR NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | _ | NR |
| | 7439-95-4 7439-96-5 | Magnesium | | - | NR NR |
| | 7439-96-5 | Manganese Mercury | 0.05 | $- \overline{\Delta N} $ | NR CV |
| | 7440-02-0 | Nickel - | | - - / - | - NR |
| | 7440-09-7 | Potassium | | - | - NR |
| | 7782-49-2 | Selenium | | - | NR |
| | 7440-22-4 | Silver | | | NR |
| | 7440-23-5 | Sodium | | _ | NR |
| | 7440-28-0 | Thallium_ | | _ | NR |
| | 7440-62-2 7440-66-6 | Vanadium_ Zinc | | - | NR NR |
| | 7440-66-6 | Cyanide | ļ | - | - NR |
| | | cyanitae | | - | —[***] |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | · · · · · · · · · · · · · · · · · · · | | |
| | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ر Name: AQUA | rec | | Contract: 91 | .082 | K40261F |
|----------------|---|--|-----------------|-------------|---|
| Lab Code: AQUA | I_ Cas | se No.: BIO | SAS No.: | | SDG No.: 39955_ |
| Matrix (soil/w | _ | | | | e ID: 216193 |
| Level (low/med |): LOW_ | _ | | Date Rece | ived: 10/13/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury | | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| | 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 | Nickel_Potasslum Selenium Silver_Sodium Thallium Vanadium Zinc Cyanide_ | | | NR NR NR NR NR NR NR NR |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |

FORM I - IN

1 EPA SAMPLE NO. THORGANIC ANALYSES DATA SHEET

| EPA | 011CTT | 110 |
|-------|--------|-----|
| P - D | SAMPLE | N() |
| | | |

| | | | | ANALYSES DATA S | | | · |
|----------|----------|------------------------|---------------------|-----------------|----------|-------------|-----------------|
| ⊿b Nam | e: AQUA | rec | | Contract: 91 | 108 | 2 | K40262F |
| | | | | | | | SDG No.: 39955 |
| | | ater): FISH | | | _ | | |
| | • | • | | | | _ | |
| evel (| low/med) |): LOW | - | | Da | te Rece | eived: 10/13/93 |
| Solid | s: | 100. | D | | | | |
| | Cor | ncentration | Units (ug | L or mg/kg dry | y w | reight): | MG/KG |
| | | CAS No. | Analyte | Concentration | С | Q | м |
| | | 7429-90-5 | Aluminum | | _ | | NR |
| | | 7440-36-0 | Antimony_ | | - | | NR NR |
| | | 7440-38-2 | Arsenic - | | - | | NR |
| | | 7440-39-3 | Barium_ | | | | NR |
| | | 7440-41-7 | | | _ | | NR |
| | | 7440-43-9 7440-70-2 | Cadmium Calcium | | - | | NR NR |
| | | 7440-70-2 | Chromium | | - | | NR NR |
| | | 7440-48-4 | | | - | | NR |
| | | 7440-50-8 | Copper | | [-[| | NR |
| | | 7439-89-6 | Iron | | - | | NR |
| | | 7439-92-1 | Lead | | | | NR |
| | | 7439-95-4 | Magnesium | | 1_1 | | NR |
| | | 7439-96-5 | Manganese | | _ | | NR |
| | | 7439-97-6 | Mercury | 0.11 | 1-1 | <u> </u> | CV |
| | | 7440-02-0 7440-09-7 | Nickel Potassium | | - | | NR NR |
| | | 7782-49-2 | Selenium | | - | | NR |
| | | 7440-22-4 | Silver - | | 1-1 | | NR |
| | | 7440-23-5 | Sodium | - | - | | NR |
| | | 7440-28-0 | | | - | | NR |
| | | 7440-62-2 | | | $ \Box $ | | NR |
| | | 7440-66-6 | Zinc | | 1_1 | | NR |
| | | | Cyanide | | - | | NR |
| color B | efore: | | Clari | ty Before: | | | Texture: |
| olor A | fter: | | Clari | ty After: | | _ | Artifacts: |
| Comment: | s: | —————— | | | | _ | _ |
| | | | | | | | |

FORM I - IN

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

| | | | | % Lipids | | |
|-----------|-------------|--------|------------------|----------|----------------------|--|
| Sample ID | Description | Sex | Fillet Weight | Fillet | Remaining Carcass | |
| K40169 | Carp | female | 2670g | 20.2 | 24.7 | |
| K40170 | Carp | female | 2323g | 24.8 | 28.3 | |
| K40179 | Carp | male | 1625g | 10.1 | 19.0 | |
| K40180 | Carp | female | 2760g | 22.2 | 31.5 | |
| K40181 | Carp | female | 907g | 6.75 | 7.2 | |
| K40182 | Carp | female | 1404g | 17.9 | 25.9 | |
| K40183 | Carp | female | 789g | 4.90 | 4.80 | |
| K40184 | Carp | male | 584g | 2.37 | 7.10 | |
| K40185 | Carp | male | 642g | 6.96 | 10.3 | |
| K40186 | Carp | female | 434g | 3.95 | 11.4 | |
| K40187 | Сагр | male | 512g | 2.66 | 10.1 | |
| K40188 | Carp | male | 454g | 7.50 | 8.20 | |
| K40189 | Carp | female | 318g | 4.23 | 8.00 | |
| K40258 | Carp | male | 751g | 2.50 | 5.47 | |
| K40259 | Carp | female | 782g | 4.91 | 8.49 | |
| K40260 | Carp | male | 833g | 7.67 | 19.4 | |
| K40261 | Carp | female | 891g | 0.95 | 2.91 | |
| K40262 | Carp | male | 682g | 7.83 | 22.0 | |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39962

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

Blasland, Bouck & Lee, Inc. Syracuse, New York

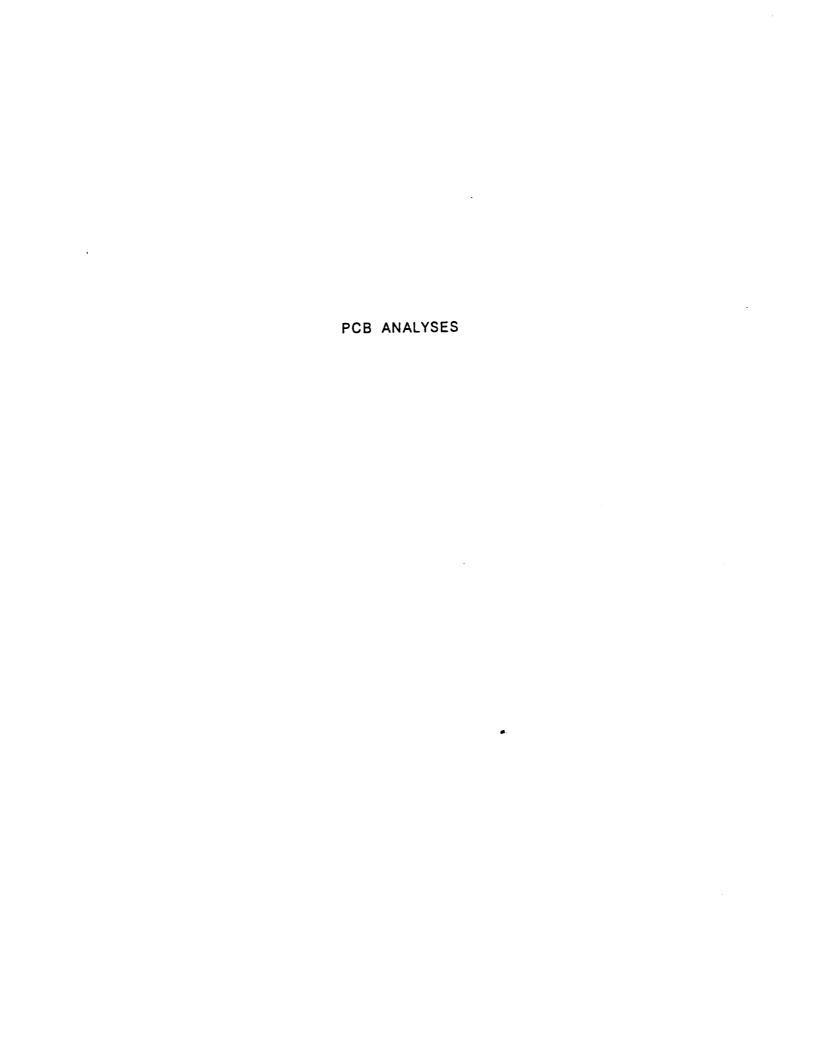
Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39962 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

| | | | | | Analysis | | |
|-----------|--------|---------|-------------|-----------------|--|--------|--|
| Sample ID | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %Lipid | |
| K40196F | 215250 | bass | fillet | Near Saugatuck | x | x | |
| K40196R | 215251 | bass | carcass | Near Saugatuck | | x | |
| K40197F | 215252 | bass | fillet | Near Saugatuck | x | × | |
| K40197R | 215253 | bass | carcass | Near Saugatuck | | X | |
| K40198F | 215254 | bass | fillet | Near Saugatuck | x | x | |
| K40198R | 215255 | bass | carcass | Near Saugatuck | | x | |
| K40199F | 215256 | bass | fillet | Near Saugatuck | x | × | |
| K40199R | 215257 | bass | carcass | Near Saugatuck | | × | |
| K40200F | 215258 | bass | fillet | Near Saugatuck | x | × | |
| K40200R | 215259 | bass | carcass | Near Saugatuck | | × | |
| K40213F | 215260 | bass | fillet | Near Saugatuck | x | × | |
| K40213R | 215261 | bass | carcass | Near Saugatuck | | × | |
| K40214F | 215262 | bass | fillet | Near Saugatuck | x | × | |
| K40214R | 215263 | bass | carcass | Near Saugatuck | | × | |
| K40215F | 215264 | bass | fillet | Near Saugatuck | х | × | |
| K40215R | 215265 | bass | carcass | Near Saugatuck | | × | |
| K40216F | 215266 | bass | fillet | Near Saugatuck | x | x | |
| K40216R | 215267 | bass | carcass | Near Saugatuck | | × | |
| K40243F | 215268 | bass | fillet | Battle Creek | x | х | |
| K40243R | 215269 | bass | carcass | Battle Creek | | × | |
| K40246F | 215270 | bass | fillet | Battle Creek | x | × | |
| K40246R | 215271 | bass | carcass | Battle Creek | | х | |
| K40247F* | 215272 | bass | fillet | Battle Creek | × | х | |
| K40247R | 215273 | bass | carcass | Battle Creek | | х | |
| K40375F | 215365 | bass | fillet | Morrow Pond | х | x | |
| K40385R | 215366 | bass | carcass | Morrow Pond | | х | |
| K40387F | 215367 | bass | fillet | Morrow Pond | x | × | |
| K40387R | 215368 | bass | carcass | Morrow Pond | | x | |

| | | | | | Analysis | |
|-----------|--------|---------|-------------|-----------------|-----------------|--------|
| Sample ID | Lab ID | Species | Description | Sample Location | Pest/PCB/ Hg | %Lipid |
| K40388F | 215369 | bass | fillet | Morrow Pond | x | x |
| K40388R | 215370 | bass | carcass | Morrow Pond | | × |
| K40389F | 215371 | bass | fillet | Morrow Pond | x | x |
| K40389R | 215372 | bass | carcass | Morrow Pond | | x |
| K40390F | 215373 | bass | fillet | Morrow Pond | x | × |
| K40390R | 215374 | bass | carcass | Morrow Pond | | × |

MS/MSD/DUP performed on sample



Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for one surrogate in samples K40213F, K40214F, K40215F, K40247F, K40247FMS, and K40247FMSD. No qualifiers were added to the samples based on the surrogate recovery. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within acceptable control limits.

8. System Performance and Overall Assessment *

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA |
|--|-----|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | × | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | _ X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | x | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-----|----------|----|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | <u> </u> | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Instrument Blanks | X | | |
| Are initial Calibration Summary Forms present and complete for each column and analytical sequence? | × | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?* | X | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| | | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|------|-------------|-------------|
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | X | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Lin | nits | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | × | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | <u> </u> | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding | Surrogates | Surrogates - Column 1 | | - Column 2 |
|------------|------------|------------|-----------------------|---------------|------------|
| | Time | TCX | DCB | TCX | DCB |
| K40196F | OK for all | | ок | | ок |
| K40197F | samples | | | | |
| K40198F | | | | | |
| K40199F | | | | | |
| K40200F | | | | | |
| K40213F | | ↓ (57) | | ↓ (58) | |
| K40214F | | ↓ (58) | | ↓ (57) | |
| K40215F | | ↓ (57) | | ↓ (56) | |
| K40216F | | | | | |
| K40243F | | | | | |
| K40246F | | | | | <u> </u> |
| K40247F | | ↓ (59) | | ↓ (58) | |
| K40247FMS | | ↓ (56) | | ↓ (58) | |
| K40247FMSD | | ↓ (58) | | | |
| K40375F | | | | | |
| K40387F | | | | | |
| K40388F | | | | | |
| K40389F | | | | | |
| K40390F | | | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP2087</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 5/1/94 2255 | 5/2 | 5/2 | 5/3 | 5/3 | 5/3 | 5/3 |
|----------------------|-------------------|---------------|---------------|---------------|---------------|---------------------------------------|---------------|
| Time: | to 5/2/94 1916 | 2028 | 2103 | 0414 | 0450 | 1200 | 1236 |
| , | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal: |
| | %RSD | %D | %D | % D | % D | % D | % D |
| Aroclor 1016 | 5.7 / 4.0 | | 1.0 | | | · · · · · · · · · · · · · · · · · · · | |
| Aroclor 1221 | 6.4 / 3.4 | | | | | | |
| Aroclor 1232 | 4.1 / 2.5 | | | | | | <u> </u> |
| Aroclor 1242 | 4.6 / 4.2 | | | | 5.5 | | |
| Aroclor 1248 | 5.1 / 4.5 | 0.5 | | 1.0 | | 1.0 | |
| Aroclor 1254 | 4.9 / 4.8 | | | | | | 7.0 |
| Aroclor 1260 | 3.6 / 3.0 | | | | | | |
| Tetrachioro-m-xylene | 6.6 / 4.5 | | | | | | |
| Decachlorobiphenyl | 6.5 / 8.5 | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP2087</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 5/3 | 5/3 | 5/4 | 5/4 | | |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 1948 | 2024 | 0335 | 0411 | | |
| . | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Çal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | *RSD | %D | %D | %D | % D | %D | % D |
| Araclar 1016 | | | | | 6.5 | | |
| Aroclor 1221 | | | | | | | |
| Aroclor 1232 | · | | | | | | |
| Arocior 1242 | | | | | | | |
| Aroclor 1248 | | 3.5 | | 9.5 | | | |
| Arocior 1254 | | | | | | | |
| Aroclor 1260 | | | 4.0 | | | | |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | İ |
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CORRECTED ANALYSIS SUMMARY FORMS

EPA SAMPLE NO. K40196F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: 91082 Case: BIO SDG: 39962 Phase Type: **BIOTA** Lab Sample ID: 215250 Phase Weight: 10.0 Date Received: 10/09/93 (g) Date Extracted: 03/30/94 Injection Volume: 1.0 (uL) 1.0 05/03/94 Dilution Factor: Date Analyzed: Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|----------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | υ |
| 11104-28-2 | Aroclor-1221 | 0.050 | υ |
| 11141-16-5 | · Aroclor-1232 | 0.050 | υ |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.26 | |
| 11097-69-1 | Aroclor-1254 | 0.19 | |
| 11096-82-5 | Aroclor-1260 | 0.028 | J |

EPA SAMPLE NO. K40197F Lab Code: _ AQUAI Lab Name: Aquatec, Inc. 39962 91082 Case: BIO SDG: Contract: Lab Sample ID: Phase Type: **BIOTA** 215252 Phase Weight: 10.0 Date Received: 10/09/93 (g) 1.0 Date Extracted: Injection Volume: (uL) 03/30/94 1.0 Date Analyzed: 05/03/94 Dilution Factor: ___ Sulfur Clean-up: (Y/N)

| COMPOUND | CONCENTRATION (mg/Kg) | Q |
|--------------|---|---|
| Arocior-1016 | 0.050 | U |
| Aroclor-1221 | 0.050 | U |
| Aroclor-1232 | 0.050 | U |
| Aroclor-1242 | 0.050 | U |
| Aroclor-1248 | 0.27 | |
| Aroclor-1254 | 0.21 | _ |
| Aroclor-1260 | 0.050 | U |
| | Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 | Aroclor-1016 0.050 Aroclor-1221 0.050 Aroclor-1232 0.050 Aroclor-1242 0.050 Aroclor-1248 0.27 Aroclor-1254 0.21 |

EPA SAMPLE NO. K40198F Lab Code: **AQUAI** Lab Name: Aquatec, Inc. SDG: ____ BIO 39962 Case: Contract: 91082 Lab Sample ID: 215254 Phase Type: **BIOTA** Date Received: 10/09/93 Phase Weight: 10.0 **(g)** Date Extracted: 03/30/94 Injection Volume: 1.0 (uL) 05/03/94 Dilution Factor: ___ 1.0 Date Analyzed: Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| <u> </u> | | | |
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.35 | |
| 11097-69-1 | Aroclor-1254 | 0.24 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40199F Lab Name: Aquatec, Inc. Lab Code: AQUAI BIO SDG: 39962 91082 Case: Contract: Lab Sample ID: Phase Type: **BIOTA** 215256 Date Received: Phase Weight: 10.0 **(g)** 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 03/30/94 Dilution Factor: _ 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Arocior-1221 | 0.050 | υ |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.27 | |
| 11097-69-1 | Aroclor-1254 | 0.17 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40200F Lab Code: IAUDA Lab Name: Aquatec, Inc. BIO SDG: 39962 Contract: _ 91082 Case: Lab Sample ID: 215258 Phase Type: **BIOTA** Phase Weight: 10.0 (g) Date Received: 10/09/93 (uL) Date Extracted: 03/30/94 Injection Volume: 1.0 1.0 Date Analyzed: 05/03/94 Dilution Factor: Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|--------------------------|----------|
| | | (ing/kg) | <u> </u> |
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.20 | |
| 11097-69-1 | Aroclor-1254 | 0.27 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |
| | | | |

EPA SAMPLE NO. K40213F Lab Name: Aquatec, Inc. Lab Code: IAUDA BIO SDG: 39962 91082 Case: Contract: Lab Sample ID: Phase Type: _ **BIOTA** 215260 Date Received: 10/12/93 Phase Weight: 10.0 (g) Injection Volume: _ 1.0 (uL) Date Extracted: 03/31/94 Dilution Factor: 1.0 Date Analyzed: 05/03/94 (Y/N) Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | υ |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.038 | J |
| 11097-69-1 | Aroclor-1254 | 0.24 | |
| 11096-82-5 | Aroclor-1260 | 0.033 | J |

EPA SAMPLE NO. K40214F Lab Code: **AQUAI** Lab Name: Aquatec, Inc. BIO SDG: 39962 Contract: 91082 Case: **BIOTA** Lab Sample ID: 215262 Phase Type: 10/12/93 Phase Weight: 10.0 Date Received: **(g)** Injection Volume: 1.0 Date Extracted: 03/31/94 (uL) 05/03/94 Dilution Factor: 1.0 Date Analyzed: Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | Ų |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.48 | |
| 11096-82-5 | Aroclor-1260 | 0.096 | |

EPA SAMPLE NO.

Ν

(Y/N)

K40215F Lab Code: Lab Name: Aquatec, Inc. AQUAL 91082 SDG: 39962 Contract: _ Case: BIO Lab Sample ID: 215264 Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: 10/12/93 (g) Date Extracted: Injection Volume: 1.0 (uL) 03/31/94 Dilution Factor: __ 1.0 Date Analyzed: 05/03/94

> CAS NO. **COMPOUND** CONCENTRATION (mg/Kg) Q 12674-11-2 Aroclor-1016 0.050 U 11104-28-2 Aroclor-1221 0.050 U Aroclor-1232 U 11141-16-5 0.050 Aroclor-1242 U 53469-21-9 0.050 12672-29-6 Aroclor-1248 0.050 U 11097-69-1 Aroclor-1254 0.10 11096-82-5 Aroclor-1260 0.030

Sulfur Clean-up:

Lab Code: _

Case:

IAUDA

BIO

EPA SAMPLE NO.

K40216F

SDG: 39962

Phase Type: BIOTA
Phase Weight: 10.0 (g)
Injection Volume: 1.0 (uL)
Dilution Factor: 1.0

91082

Lab Name: Aquatec, Inc.

Contract:

 Lab Sample ID:
 215266

 Date Received:
 10/12/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.79 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40243F Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: ____ 91082 Case: BIO SDG: 39962 Lab Sample ID: 215268 Phase Type: ___ **BIOTA** Phase Weight: 10.0 Date Received: 10/12/93 (g) Injection Volume: Date Extracted: 03/31/94 1.0 (uL) Dilution Factor: 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: N____ (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | บ |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.049 | J |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40246F IAUDA Lab Name: Aquatec, Inc. Lab Code: SDG: __ 39962 91082 BIO Contract: Case: Phase Type: **BIOTA** Lab Sample ID: 215270 Date Received: Phase Weight: 10.0 **(g)** 10/12/93 Date Extracted: Injection Volume: 1.0 (uL) 03/31/94 Dilution Factor: _ Date Analyzed: 05/03/94 1.0 Sulfur Clean-up: Υ (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.10 | |
| 11096-82-5 | Aroclor-1260 | 0.038 | J |

EPA SAMPLE NO. K40247F Lab Code: Lab Name: Aquatec, Inc. AQUAI BIO SDG: ____ 39962 Contract: _ 91082 Case: Phase Type: **BIOTA** Lab Sample ID: 215272 Phase Weight: 10.0 (g) Date Received: 10/12/93 Injection Volume: 1.0 Date Extracted: 03/31/94 (uL) Dilution Factor: _ 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|-------------------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | Ų |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.064 | |
| 11096-82-5 Aroclor-1260 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40375F Lab Code: Lab Name: Aquatec, Inc. **AQUAI** 39962 91082 BIO SDG: Contract: Case: Phase Type: **BIOTA** Lab Sample ID: 215365 Phase Weight: 10.0 (g) Date Received: 10/16/93 Injection Volume: ____ 1.0 (uL) Date Extracted: 03/31/94 Dilution Factor: 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.40 | |
| 11097-69-1 | Aroclor-1254 | 0.22 | |
| 11096-82-5 | Aroclor-1260 | 0.058 | |
| | | | L |

EPA SAMPLE NO. K40387F Lab Name: Aquatec, Inc. Lab Code: AQUAI 39962 BIO SDG: ___ Contract: _ 91082 Case: Lab Sample ID: 215367 Phase Type: **BIOTA** Phase Weight: ____ 10.0 Date Received: 10/16/93 (g) Date Extracted: Injection Volume: ___ 1.0 (uL) 04/26/94 Dilution Factor: _____1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | | |
|------------|--------------|-----------------------|----|--|
| 12674-11-2 | Aroclor-1016 | 0.050 | Į. | |
| 11104-28-2 | Arocior-1221 | 0.050 | ر | |
| 11141-16-5 | Aroclor-1232 | 0.050 | U | |
| 53469-21-9 | Aroclor-1242 | 0.050 | U | |
| 12672-29-6 | Aroclor-1248 | 0.050 | Ĺ | |
| 11097-69-1 | Aroclor-1254 | 0.10 | | |
| 11096-82-5 | Aroclor-1260 | 0.039 | J | |

EPA SAMPLE NO. K40388F Lab Name: Aquatec, Inc. Lab Code: IAUDA Contract: 91082 Case: BIO SDG: 39962 **BIOTA** Lab Sample ID: 215369 Phase Type: Phase Weight: 10.0 Date Received: 10/16/93 **(g)** Injection Volume: _ 1.0 (uL) Date Extracted: 03/31/94 Dilution Factor: _ 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | CAS NO. COMPOUND CONCENTRATIO | | |
|------------|-------------------------------|-------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.10 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO.

K40389F Lab Name: Aquatec, Inc. Lab Code: _ **AQUAI** 91082 Case: BIO SDG: 39962 Contract: Phase Type: __ **BIOTA** Lab Sample ID: 215371 10.0 Date Received: 10/16/93 Phase Weight: _ (g) 1.0 Date Extracted: 03/31/94 Injection Volume: (uL) Dilution Factor: ____ 1.0 05/03/94 Date Analyzed: Sulfur Clean-up: N (Y/N)

| CAS NO. COMPOUND | | CONCENTRATION (mg/Kg) | <u>a</u> | |
|------------------|--------------|--------------------------|----------|--|
| 12674-11-2 | Aroclor-1016 | 0.050 | U | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U | |
| 11141-16-5 | Aroclor-1232 | 0.050 | U | |
| 53469-21-9 | Aroclor-1242 | 0.050 | U | |
| 12672-29-6 | Aroclor-1248 | 0.050 | l | |
| 11097-69-1 | Aroclor-1254 | 0.15 | | |
| 11096-82-5 | Aroclor-1260 | 0.089 | | |

EPA SAMPLE NO. K40390F Lab Name: Aquatec, Inc. Lab Code: IAUDA 91082 SDG: 39962 Contract: Case: BIQ **BIOTA** Lab Sample ID: 215373 Phase Type: 10/16/93 Phase Weight: 10.0 (g) Date Received: Injection Volume: _ 1.0 (uL) Date Extracted: 03/31/94 Dilution Factor: 1.0 Date Analyzed: 05/03/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|--------------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.46 | |
| 11096-82-5 | Aroclor-1260 | 0.097 | |

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit with the following exception:

Instrument HP2404, RTX-5 5/18/94 07:36

2-Bromobiphenyl 27.1%

All data for this compound have been qualified as estimated in the associated samples K40247FMSDL and K40247FMSDL.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

All surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40196F | Aldrin 4,4'-DDE | 60.0% 27.8% |
|--|--|--------------------------|
| K40197F | Aldrin 4,4'-DDE | 80.0% 30.8% |
| K40198F | Aldrin 4,4'-DDE | 87.5% 28.6% |
| K41994F | Aldrin | 100.0% |
| K40200F | Aldrin 4,4'-DDE | 100.0% 28.6% |
| K40213F | Aldrin 4,4'-DDE | 86.4% 26.7% |
| K40214F Aldrin trans-Nonachlor cis-Nonachlor | | 83.3% 48.1% 182.1% |
| K40216F | Aldrin gamma-Chlordane cis-Nonachlor | 146.2% 77.4% 29.3% |
| K40247F | 4,4'-DDE | 53.8% |
| K40390F | trans-Nonachlor cis-Nonachlor | 49.1% 38.0% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were high in both the matrix spike and matrix spike duplicate samples. The elevated recoveries were most likely due to positive interference from PCBs present in the samples. The blank spike associated with the MS/MSD had acceptable recoveries for all compounds. No qualifiers have been added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

| | YES | NO | NA |
|--|----------|----|----|
| Data Completeness and Deliverables | | | |
| is there a narrative or cover letter present? | <u>X</u> | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | <u> </u> | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | × | | |
| Are the outliers correctly marked with an asterisk? | | | X |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | | X | |
| If yes, were the samples reanalyzed? | | | X |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | <u> </u> | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| out of8 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| <u>0</u> out of <u>4</u> | | | |
| Blanks | | | |
| Is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | × | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|------------|-------------|----------|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | . X | • |
| Do any trip/field/rinse blanks have positive results? | | | <u> </u> |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts pre blanks, and MS/MSD? | sent for a | all samples | , |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | | |
| Toxaphene multipoint calibration | X | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | X | | |
| ls the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | X | | |
| is Form VII-1 present for each BCS analyzed for both columns? | X | | |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | | X | |
| ls Form VII-2 present and complete for each mid-point standard analyzed? | X | | |
| Are RPD values for all compounds < 25%? | X | | |
| Analytical Sequence Check | | | |
| ls Form VIII present and complete for each column and each period of analyses? | X | | |

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA |
|---|----------|----|----|
| .Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | <u> </u> | | |
| Are all samples listed on the form? | X | | |
| If GPC cleanup was performed, is Form IX-2 present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | <u> </u> | | |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| Is a Form X present for every sample in which a pesticide or PCB was detected? | X | | |
| Was GC/MS confirmation provided when required? | | | X |
| Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | X | |
| Were there any false negatives? | | X | |
| Compound Quantitation and Reported Detection Limit | <u></u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> </u> | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| <u>Field Duplicates</u> | | | |
| Where field duplicates submitted with the samples? | | X | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | | | Surrogates - | Column 2 |
|------------|------------|-----|-----|--------------|----------|
| | Time | тсх | DCB | тсх | DCB |
| K40196F | OK for all | ок | ок | ок | ок |
| K40197F | samples | | | | |
| K40198F | | | | <u> </u> | |
| K40199F | | | | | |
| K40200F | | | | | |
| K40213F | | | | | |
| K40214F | | | | | <u> </u> |
| K40215F | | | | | |
| K40216F | | | | | |
| K40243F | | | | | |
| K40246F | | | | | |
| K40247F | | | | | |
| K40247FMS | | | | | |
| K40247FMSD | | | | | |
| K40375F | | | | | |
| K40387F | | | | | |
| K40388F | | | | | |
| K40389F | | | | | |
| K40390F | | | | | |

TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Surrogate diluted out Recovery high D

Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 4/26/94 | 5/2 | 5 /3 | 5/3 | 5/3 | | |
|-----------------------------|----------------|---------------|---------------|---------------|---------------|---------------|--|
| Time: | 20:30 | 22:28 | 06:47 | 15:08 | 23:29 | | |
| | Initial Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | %D | %D | % D | %D | % D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | | |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | <u></u> | | |
| Hexachlorobenzene | | | <u> </u> | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chiordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | Ĺ | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | ļ |
| Tetrachloro-m-xylene | | | | | . | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 2

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 4/26/94 | 5/2 | 5/3 | 5/3 | 5/3 | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 20:30 | 22:28 | 06:47 | 15:08 | 23:29 | | |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D | %D | %D | %D | %D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | | |
| 3-Bromobiphenyl | | | <u> </u> | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | <u> </u> | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | <u></u> |
| cis-Nonachlor | | | <u> </u> | <u> </u> | <u> </u> | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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| Ī | | | | | | | |

Pesticide/PBB Calibration Summary - Page 3

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 5/17/94 | 5/18 | | | | | |
|-----------------------------|----------------|------------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 17:19 | 07:36 | | | | | |
| | Initial Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cant. Cal. | Cont. Căl. |
| | %RSD | *D | %D | % D | %D | %D | %D |
| 2-Bromobiphenyl | ok | 27.1 | | | | | |
| 3-Bromobiphenyl | | | - | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachiorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | _ |
| Aldrin | | | | | | | ·- |
| Heptaclor epoxide | | | | | | | |
| gamma-Chiordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | - | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | | 4 . | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | K40247 FMSDL | | | | | |
| | | K40247 FMSDDL | | | | | |
| | | | | | | | |
| | | | | | | | |
| <u> </u> | | | | | | | |

Pesticide/PBB Calibration Summary - Page 4

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/17/94 | 5/18 | | | _ | | |
|-----------------------------|---------------------------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 17:19 | 07:36 | | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D. | %D | % D | % D | %D | %D |
| 2-Bromobiphenyl | ok | ok | | | | | <u></u> |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachiorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | <u> </u> | |
| trans-Nonachior | · | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | · · · · · · · · · · · · · · · · · · · | | | | | | <u> </u> |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachioro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
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| ſ | | | | | | | |
| | | | | | | | |

Corrected Sample Analysis Data Sheets

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40196F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215250

 Date Received:
 10/09/93

 Date Extracted:
 03/30/94

 Date Analyzed:
 05/02/94

 Sulfur Clean-up:
 N

| | | | |
|-------------|--------------------|-----------------------|----|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachiorobenzene | 0.0050 | U. |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.010 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.018 | 4 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40197F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215252

 Date Received:
 10/09/93

 Date Extracted:
 03/30/94

 Date Analyzed:
 05/02/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ü |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.010 | NT |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachior | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.013 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40198F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215254

 Date Received:
 10/09/93

 Date Extracted:
 03/30/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ü |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0096 | NC |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | Ü |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.014 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

1.0

Client ID No. K40199F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor:

 Lab Sample ID:
 215256

 Date Received:
 10/09/93

 Date Extracted:
 03/30/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.012 | |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | Ū |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | aipha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.020 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.

39962

215258

N

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor:

1.0

Date Extracted:
Date Analyzed:
Sulfur Clean-up:

Lab Sample ID:

Date Received:

SDG:

10/09/93 03/30/94 05/03/94

| | T | | | |
|------------|--------------------|-----------------------|---|---|
| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.0080 | | R |
| 1024-57-3 | Heptachlor Epoxide | 0.0071 | | • |
| 5103-74-2 | gamma-Chlordane | . 0.0050 | U | |
| 5103-71-9 | aipha-Chiordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.014 | 4 | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

 Lab Name:
 Aquatec, Inc.
 K40213F

 Lab Code:
 AQUAI

 Contract:
 91082

 Case:
 BIO

 SDG:
 39962

 Lab Sample ID:
 215260

Client ID No.

Date Received: 10/12/93 Phase Type: **Biota** Phase Weight: 10.0 Date Extracted: 03/31/94 Extraction: Date Analyzed: 05/03/94 Soxhlet Dilution Factor: 1.0 Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UU |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0059 | 70 |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.015 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40214F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215262

 Date Received:
 10/12/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ų |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.022 | JN |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachior | 0.0081 | 7 |
| 72-55-9 | 4,4'-DDE | 0.063 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103 73 1 | cis Nonachlor | 0.0067 | |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | υ |
| 8001-35-2 | Toxaphene | 0.20 | U |

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Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40215F

39962

Phase Type:

Phase Weight:

Extraction:

Dilution Factor:

Biota

10.0 g

Soxhlet

1.0

Lab Sample ID: 215264
Date Received: 10/12/93
Date Extracted: 03/31/94
Date Analyzed: 05/03/94
Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachiorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chiordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachior | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.013 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40216F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215266

 Date Received:
 10/12/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| COMPOUND | CONCENTRATION (mg/Kg) | a | |
|--------------------|---|---|--|
| 2-Bromobiphenyl | 0.010 | U | |
| 3-Bromobiphenyl | 0.010 | U | |
| 4-Bromobiphenyl | 0.010 | U | |
| Hexachiorobenzene | 0.0050 | U | |
| gamma-BHC | 0.0050 | U | |
| Aldrin | 0:013 | | R |
| Heptachlor Epoxide | 0.012 | | |
| gamma-Chlordane | 0.0062 | _ JN | |
| alpha-Chlordane | 0.0050 | U | |
| trans-Nonachlor | 0.0050 | U | |
| 4,4'-DDE | 0.049 | | |
| Dieldrin | 0.010 | U | |
| 4,4'-DDD | 0.010 | Ŭ | |
| cis-Nonachlor | 0.0075 | j | |
| 4,4'-DDT | 0.010 | Ú | |
| Hexabromobiphenyl | 0.020 | U | |
| Toxaphene | 0.20 | U | |
| | 2-Bromobiphenyl 3-Bromobiphenyl 4-Bromobiphenyl Hexachlorobenzene gamma-BHC Aldrin Heptachlor Epoxide gamma-Chlordane alpha-Chlordane trans-Nonachlor 4,4'-DDE Dieldrin 4,4'-DDD cis-Nonachlor 4,4'-DDT Hexabromobiphenyl | 2-Bromobiphenyl 0.010 3-Bromobiphenyl 0.010 4-Bromobiphenyl 0.010 Hexachlorobenzene 0.0050 gamma-BHC 0.0050 Aldrin 0.013 Heptachlor Epoxide 0.012 gamma-Chlordane 0.0062 alpha-Chlordane 0.0050 trans-Nonachlor 0.0050 4,4'-DDE 0.049 Dieldrin 0.010 4,4'-DDD 0.010 cis-Nonachlor 0.0075 4,4'-DDT 0.010 Hexabromobiphenyl 0.020 | Comp/Kg Comp/Kg |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40243F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215268

 Date Received:
 10/12/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachiorobenzene | 0.0050 | · U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | υ |
| 72-55-9 | 4,4'-DDE | 0.012 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40246F

39962

Phase Type:

Phase Weight:

Extraction:

Dilution Factor:

Biota

10.0 g

Soxhlet

1.0

Lab Sample ID: 215270
Date Received: 10/12/93
Date Extracted: 03/31/94
Date Analyzed: 05/03/94
Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | aipha-Chiordane | 0.0050 | Ú |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.027 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40247F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 215272

Date Received: 10/12/93

Date Extracted: 03/31/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | υ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.016 | 77 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.005ბ | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUA!

Contract: 91082

Case: BIO SDG:

Client ID No.
K40375F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 215365

Date Received: 10/16/93

Date Extracted: 03/31/94

Date Analyzed: 05/03/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.012 | |
| 1024-57-3 | Heptachlor Epoxide | 0.010 | |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.013 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40387F

39962

Phase Type:

Phase Weight:

Extraction:

Dilution Factor:

Biota

Boxhlet

10.0 g

Soxhlet

1.0

 Lab Sample ID:
 215367

 Date Received:
 10/16/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.016 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40388F

39962

L D

 Lab Sample ID:
 215369

 Date Received:
 10/16/93

 Date Extracted:
 03/31/94

SDG:

Date Analyzed: 05/03/94
Sulfur Clean-up: N

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachiorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chiordane | 0.0050 | Ú |
| 5103-71-9 | aipha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.011 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40389F

SDG: 39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215371

 Date Received:
 10/16/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ü |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ü |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | Ú |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.017 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40390F

39962

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 215373

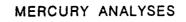
 Date Received:
 10/16/93

 Date Extracted:
 03/31/94

 Date Analyzed:
 05/03/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0057 | 4 |
| 72-55-9 | 4,4'-DDE | 0.056 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | Ţ |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |



Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- Duplicate analysis not within control limits.
- + Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

CRDL standard recovery was slightly above acceptable limits. No data fell in the affected range; therefore, no data qualification was necessary.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was slightly below acceptable limits. All data have been qualified as estimated based on the deviation.

4.2 Laboratory Duplicate

The laboratory duplicate relative percent difference (RPD) was outside specified limits. No qualifiers have been added to the samples based on the RPD.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.

Data Validation Checksheets

| | YES | NO | NA |
|--|-------------|---------------|-------------|
| Data Completeness and Deliverables | | - | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | X | - | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| Is the distillation log for cyanides present? | | | X |
| Are preparation dates present on sample preparation logs/bench sheets? | × | | |
| Are the measurement read out records present for: | | | |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | Х |
| Mercury | X | | |
| Cyanides | | | X |
| Is the data legible? | X | | |
| ls the data properly labeled? | X | | |
| Holding Times | | | |
| Were mercury analyses performed within 28 days? | <u> </u> | | |

| | YES | NO | NA |
|---|-------------|-------------|----|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | X | | |
| Are correct units indicated on Form I's? | X | | |
| Are all "less than IDL" values properly coded with "U"? | X | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | |
| Calibration | | | |
| Is a record of at least 2 point calibration present for ICP analysis? | | | X |
| Is a record of 5 point calibration present for Hg analysis? | X | | |
| Is a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | | | X |
| is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | X |
| ls correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verifica | ation) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | X | | |
| Cyanides (85-115 %R)? | | | X |
| | | | |

| | YES | NO | NA |
|--|-------------|----|----|
| Was continuing calibration performed every 10 samples or every 2 hours? | X | | |
| Was the ICV for cyanides distilled? | | | X |
| Form II B (CRDL Standards for AA and ICP) | | | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis? | | | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | *********** | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | | X | |
| ls mid-range standard within control limits for cyanide (80-120 %R) | | | X |
| Form III (Initial and Continuing Calibration Blanks) | | | |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL <crdl) (crdls)?<="" contract="" detection="" equal="" less="" limits="" or="" required="" td="" than="" the="" to=""><td>X</td><td></td><td></td></crdl)> | X | | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | | | X |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | X | | |
| each matrix type? | X | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | X | • |

| | YES | NO | NA |
|--|-----------|----------------|-------------|
| If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | | X |
| Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL? | | | X |
| Is concentration of prep. blank below the negative CRDL? | | X | |
| Form IV (ICP Interference Check Sample) | | | |
| Present and complete? | | | X |
| Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | | | X |
| Are all Interference Check Sample results inside the control limits $(\pm 20\%)$? | | | × |
| If no, is concentration of AI, Ca, Fe, or Mg lower than the respective concentration in ICS? | | | X |
| Form V A (Spiked Sample Recovery - Pre-Digestion/P | re-Distil | <u>lation)</u> | |
| Present and complete for: | | | |
| each SDG? | X | | |
| each matrix type? | X | | |
| Was field blank used for spiked sample? | | X | |
| Are all recoveries within control limits (75-125)? | | X | |
| If no, is sample concentration greater than or equal to four times spike concentration? | | X | |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | X | | |
| Are any spike recoveries: | | | |
| less than 10%? | | X | |
| between 10-74%? | X | | |
| between 126-200%? | | X | |
| greater than 200%? | | X | |
| Form VI (Lab Duplicates) | | | |
| Present and complete for: | | | |
| each SDG? | X | | |

| | YES | NO | NA |
|---|-------------|-------------|---------------------------------------|
| each matrix type? | X | | |
| Was field blank used for duplicate analysis? | | X | |
| Are all values within control limits (RPD 20% or difference \leq \pm CRDL)? | | X | |
| If no, are all results outside the control limits flagged with an * on Form I's and VI? | X | | · · · · · · · · · · · · · · · · · · · |
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%? | | X | |
| Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL? | | | X |
| Form VII (Laboratory Control Sample) | | | |
| Was one LCS prepared and analyzed for: | | | |
| each SDG? | X | | |
| each batch samples digested/distilled? | X | | |
| Is LLCS "Found" value higher than the control limits on Form VII? | | X | |
| is LCS "Found" lower than the control limits on Form VII? | | X | • |
| Form IX (ICP Serial Dilution) | | | <u></u> |
| Was Serial Dilution analysis performed for: | | | |
| each SDG? | | | X |
| each matrix type? | | | × |
| Was field blank(s) used for Serial Dilution Analysis? | <u></u> | | × |
| Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | | | × |
| Are any % difference values: | | | |
| > 10%? | | | X |
| ≥ 100%? | | | X |
| Furnace Atomic Absorption (AA) QC Analysis | | | |
| Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA? | | | × |

| | YES | NO | NA |
|--|------|----|----|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| Is analytical spike recovery outside the control limits (85-115%) for any sample? | | | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | X | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | X |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | × |
| Field Blank | | | |
| Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | X |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | X | | |
| all the instruments used? | X | | |

| | YES | NO | NA |
|---|-------------|----|----|
| Is IDL greater than CRDL for any analyte? | | X | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than $5 \times IDL$. | | | X |
| Was any sample result higher linear range of ICP. | | | X |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | X | |
| If yes for any of the above, was the sample diluted to obtain the result on Form 1? | | | X |

Corrected Sample Analysis Data Sheets

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQUA | TEC | | Contract: 93 | 1082 | K40196F |
|---------------|------------------------|------------------|-----------------|-----------|------------------|
| | | | | | SDG No.: 39962_ |
| atrix (soil/w | ater): FISH | | | Lab Samp | ole ID: 215250 |
| evel (low/med |): LOW_ | _ | | Date Rec | ceived: 10/09/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | c Q | M |
| | | _ | | _ | |
| | 7429-90-5 | Aluminum_ | | | NR NR |
| • | 7440-36-0 7440-38-2 | Antimony Arsenic | | | - NR |
| | | Barium — | | - | - NR |
| | | Beryllium | | | NR |
| | 7440-43-9 | Cadmium | | | NR |
| | | Calcium_ | | | NR |
| | | Chromium | | | NR |
| | 7440-48-4 | | | _ | NR |
| | | Copper | | - | NR |
| | | Iron Lead | | | NR NR |
| | | Magnesium | | - | - NR |
| | | Manganese | | | NR |
| | | Mercury | 0.04 | _ 7N* | CV |
| | 7440-02-0 | Nickel T | | | NR . |
| | | Potassium | | | NR |
| | | Selenium_ | | _ | NR |
| | | Silver | | _ | NR |
| | | SodiumThallium | | - | NR NR |
| | | Vanadium | | - | - NR |
| | 7440-66-6 | Zinc | | - | NR |
| | | Cyanide | | - | NR |
| | | | | | _ |
| olor Before: | | Clarit | y Before: | | Texture: |
| olor After: | | Clarit | y After: | | Artifacts: |
| omments: | | | | | |
| | | | | | |
| | | | | | |

FORM I - IN

ILM02.1

I EPA SAMPLE NO.

| Name: AQUA | TEC | | Contract: 9: | 108 | 32 | K40197F |
|---------------|-------------|----------------------|-------------------|-----|-------------|--------------------|
| ab Code: AQUA | .I Ca | se No.: BI | SAS No.: | : | | SDG No.: 39962 |
| atrix (soil/w | _ | | | _ | | - le ID: 215252 |
| | • | _ | • | | _ | |
| evel (low/med | i): LOW_ | _ | | Da | ate Reco | eived: 10/09/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | / V | weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C | Q | м |
| | CID NO. | maryce | CO.10C11C1 GC1011 | | * | |
| | | Aluminum | | | | NR |
| | | Antimony_ | | _ | | NR |
| | | Arsenic | | _ | | NR |
| | | Barium | | - | | NR |
| | | Beryllium Cadmium | | - | | NR NR |
| | | Calcium | | - | | NR NR |
| | | Chromium | | - | | NR |
| | | Cobalt | | - | | NR |
| | • | Copper | | - | | NR |
| | | Iron | | - | | NR |
| | | Lead | | - | | NR |
| | | Magnesium | | - | · | NR |
| | | Manganese | | _ | | NR |
| | 7439-97-6 | Mercury | 0.12 | | *NT | (CV) |
| | 7440-02-0 | Nickel | | _ | | NR |
| | 1 | Potassium | | | | NR |
| | | Selenium_ | | | | NR |
| | 7440-22-4 | | | | | NR |
| | | Sodium | | _ | | NR |
| | 1 ' ' | Thallium_ | | _ | | NR |
| | 7440-62-2 | Vanadium_ | | _ | | NR |
| | 7440-66-6 | Zinc | | _ | | NR |
| | | Cyanide | | _ | | NR |
| lor Before: | | Clarit | y Before: | | | Texture: |
| lor After: | | | y After: | | | Artifacts: |
| mments: | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQU | ATEC | Contract: 91082 | | | | K40198F | |
|--------------|--------------|-----------------|-----------------|-----|-------------|-----------------|--|
| b Code: AQU | AI_ Ca | se No.: BI | SAS No. | : _ | | SDG No.: 39962 | |
| rix (soil/ | water): FISH | | | La | ab Samp | le ID: 215254 | |
| rel (low/med | d): LOW_ | . | | Da | ate Rec | eived: 10/09/93 | |
| Solids: | 100. | 0 | | | | | |
| Co | oncentration | Units (ug | /L or mg/kg dry | yv | weight) | : MG/KG | |
| | CAS No. | Analyte | Concentration | С | Q | M | |
| | 7429-90-5 | Aluminum | | - | | NR | |
| | | Antimony | | - | | NR | |
| | 7440-38-2 | Arsenic | | | | NR | |
| | | Barium | | | | NR | |
| | 7440-41-7 | Beryllium | | _ | | NR | |
| | 7440-43-9 | Cadmium_ | | _ | | NR | |
| | • | Calcium | | _ | | NR | |
| | | Chromium | | - | | NR NR | |
| | | Cobalt | | - | | NR | |
| | | Copper | | - | <u> </u> | NR | |
| | | Lead | | - | l ——— | NR | |
| | | Magnesium | | | | NR | |
| | | Manganese | | - | | NR | |
| | | Mercury_ | 0.07 | - | <u>*N*</u> | CV | |
| | 7440-02-0 | Nickel - | | - | | NR | |
| | | Potassium | | - | | NR | |
| | | Selenium | | - | | NR | |
| | | Silver - | | _ | | NR | |
| | 7440-23-5 | Sodium | | - | | NR | |
| | 7440-28-0 | Thallium | | _ | | NR | |
| | 7440-62-2 | Vanadium_ | | | | NR | |
| | 7440-66-6 | Zinc | | | | NR | |
| | | Cyanide | | - | | NR | |
| lor Before: | · | Clarit | ty Before: | · — | · ——— | Texture: | |
| | | | | • | | | |
| lor After: | | Clarit | ty After: | | _ | Artifacts: | |
| mments: | | | | | | | |
| | | | | | | | |

FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQU | ATEC | | Contract: 9 | 1082 | | K40199F |
|--------------|------------------------|----------------------|-----------------|--------------------|--------|----------------|
| | | | O SAS No.: | : | | SDG No.: 39962 |
| trix (soil/ | water): FISH | <u>-</u> | | Lab S | Sample | ID: 215256 |
| vel (low/med | i): LOW_ | _ | | Date | Recei | ved: 10/09/93 |
| Solids: | 100. | 0 | | | | |
| Co | oncentration | Units (ug | /L or mg/kg dry | y weig | ght): | MG/KG |
| | CAS No. | Analyte | Concentration | c (| 2 1 | 4 |
| | | | | _ _ | , | |
| | 7429-90-5 | | | - | | ĪR VR |
| | 7440-36-0 7440-38-2 | Antimony_ Arsenic | | - | | TR |
| • | 7440-39-3 | Barium | | - | | IR |
| | 7440-41-7 | Beryllium | | - | | IR I |
| | 7440-43-9 | Cadmium | | - | | IR I |
| | | Calcium | | - | | TR |
| | 7440-47-3 | | | - | | VR |
| | 7440-48-4 | Cobalt | | - | | IR |
| | 7440-50-8 | Copper | | - | | VIR |
| | 7439-89-6 | Iron | | - | | IR |
| | 7439-92-1 | Lead | | - | | VR |
| | | Magnesium | | - | | VR |
| | 7439-96-5 | Manganese | | - | | VR. |
| | 7439-97-6 | Mercury_ | 0.06 | | | ZV |
| | 7440-02-0 | Nickel - | | [- - - | | NR I |
| | • | Potassium | | - | | VR. |
| | | Selenium | | - | | NR |
| | | Silver | | - | | NR |
| | 7440-23-5 | Sodium | | - | | VIR. |
| | 7440-28-0 | Thallium | | - - | | NR . |
| | 7440-62-2 | Vanadium | | - | | NR . |
| | 7440-66-6 | Zinc | | - | | NR |
| | | Cyanide_ | | | 1 | NR |
| . | l | | | 1_1 | 1- | |
| lor Before: | | Clarit | y Before: | | ` | Texture: |
| or After: | | Clarit | y After: | | 1 | Artifacts: |
| ments: | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Ab Code: AQUAI | Name: AQUATEC | | | Contract: 91082 | | | K40200F | |
|---|---------------|--------------|--------------|-----------------|------------|---------------|-----------------|--|
| Cas No. | b Code: AQUA | I_ Ca | se No.: BI | O SAS No.: | : . | | SDG No.: 39962 | |
| Cas No. | trix (soil/w | vater): FISH | - | | L | ab Samp | le ID: 215258 | |
| CAS No. | vel (low/med | i): Low_ | | | Da | ate Rec | eived: 10/09/93 | |
| CAS No. | Solids: | 100. | 0 | | | | | |
| 7429-90-5 7440-36-0 7440-38-2 7440-39-3 8arium 7440-41-7 8eryllium 7440-43-9 Cadmium 7440-47-3 Chromium 7440-48-4 Cobalt 7440-50-8 Copper 7439-89-6 Iron 7439-92-1 Lead 7439-95-4 Magnesium 7439-96-5 Manganese 7439-97-6 Mercury 7440-02-0 Nickel NR NR NR NR NR NR NR NR NR NR NR NR NR | Co | ncentration | Units (ug | /L or mg/kg dry | , t | weight) | : MG/KG | |
| 7440-36-0 Antimony | | CAS No. | Analyte | Concentration | С | Q | м | |
| 7440-36-0 Antimony | | 7429-90-5 | Aluminum | | - | | | |
| 7440-38-2 Arsenic NR 7440-39-3 Barium NR 7440-41-7 Beryllium NR 7440-43-9 Cadmium NR 7440-47-3 Chromium NR 7440-48-4 Cobalt NR 7440-50-8 Copper NR 7439-89-6 Iron NR 7439-95-4 Magnesium NR 7439-96-5 Manganese NR 7440-02-0 Nickel NR 7440-09-7 Potassium NR 7782-49-2 Selenium NR 7440-22-4 Silver NR 7440-23-5 Sodium NR 7440-28-0 Thallium NR | | | | | - | | | |
| 7440-39-3 Barium | | 7440-38-2 | Arsenic | | - | | | |
| 7440-43-9 7440-70-2 7440-47-3 7440-48-4 Cobalt 7440-50-8 Copper 7439-98-6 Iron NR 7439-95-4 Magnesium 7439-97-6 Mercury NR 7440-02-0 Nickel 7440-09-7 Potassium 7782-49-2 Selenium 7440-23-5 Sodium 7440-28-0 Thallium NR NR NR NR NR NR NR NR NR NR NR NR NR | | 7440-39-3 | Barium | | | | | |
| 7440-70-2 Calcium | | | | | | | | |
| 7440-47-3 | | | | | _ | | | |
| 7440-48-4 Cobalt | | | | | _ | 1 | | |
| 7440-50-8 Copper | | | | | _ | | | |
| 7439-89-6 | | | | | _ | | | |
| 7439-92-1 Lead | | | | | _ | | | |
| 7439-95-4 Magnesium 7439-96-5 Manganese 7439-97-6 Mercury 7440-02-0 Nickel 7440-09-7 Potassium 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-28-0 Thallium | | | |] | - |] | | |
| 7439-96-5 Manganese 7439-97-6 Mercury 7440-02-0 Nickel 7440-09-7 Potassium 7782-49-2 Selenium 7440-22-4 Silver 7440-23-5 Sodium 7440-28-0 Thallium | | E . | · | | - | l | | |
| 7439-97-6 Mercury 0.09 TN* CV NR 7440-02-0 Nickel Not NR NR NR NR NR NR NR NR NR NR NR NR NR | | | | | - | l | | |
| 7440-02-0 Nickel | | | | 0.00 | - | = N+ | | |
| 7440-09-7 Potassium | | 7440-02-0 | Nickel - | 0.09 | | - | | |
| 7782-49-2 Selenium | | | | | | l | | |
| 7440-22-4 Silver NR NR NR 7440-23-5 Sodium NR NR NR | | | | | - | | | |
| 7440-23-5 Sodium NR NR NR NR NR NR NR N | • | | | | - | | | |
| 7440-28-0 Thallium NR | | | | | - | | | |
| | | | | | - |] | | |
| | | 7440-62-2 | Vanadium | | - | - | - NR | |
| 7440-66-6 Zinc NR | , | | | | - | I | | |
| Cyanide NR | | | | | _ | | | |
| lor Before: Clarity Before: Texture: | lor Before: | I | Clarit | ty Before: | ۱ — | | Texture: | |
| | | | | | | | Artifacts: | |
| mments: | | | | | | | | |

INORGANIC ANALYSES DATA SHEET

| Name: AOUATEC | | | Contract: 91 | L082 | K40213F |
|---------------------------------------|-------------|------------|------------------|---------------------------------------|--------------------|
| ' | | | | | SDG No.: 39962_ |
| Matrix (soil/wate | | | | | - le ID: 215260 |
| • | - | - | | | |
| Level (low/med): | LOW | - | | Date Rec | eived: 10/12/93 |
| : Solids: | 100.0 |) | | | |
| Conce | ntration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| C) | S No. | Analyte | Concentration | c Q | M |
| دما | 5 NO. | wigtlice | COLICELLET ACTOR | | [^m] |
| 74 | 29-90-5 | Aluminum | | - | NR |
| | | Antimony - | | - | NR |
| 74 | 40-38-2 | Arsenic - | | | NR |
| 74 | 40-39-3 | Barium - | | | NR |
| 74 | 40-41-7 | Beryllium | | | NR |
| 74 | 40-43-9 | Cadmium | | | NR |
| 74 | 40-70-2 | Calcium_ | | | NR |
| | 40-47-3 | Chromium_ | | | NR |
| · · · · · · · · · · · · · · · · · · · | 40-48-4 | Cobalt | | | NR |
| | 40-50-8 | Copper | | | NR |
| • | 39-89-6 | Iron | | | NR |
| ' = | 39-92-1 | Lead | | | NR |
| · - | 39-95-4 | Magnesium | | | NR |
| | 39-96-5 | Manganese | | _ | NR |
| ' * | | Mercury | 0.13 | | [CV] |
| | 40-02-0 | Nickel | | | NR |
| | | Potassium | | | NR |
| | B2-49-2 | Selenium_ | | _ | NR |
| | | Silver | | | NR |
| | 40-23-5 | Sodium | | | NR |
| 1 . | 40-28-0 | Thallium | | _ | NR |
| I | 40-62-2 | Vanadium_ | | <u> </u> | NR |
| 74 | 40-66-6 | Zinc | | _ | NR |
| | | Cyanide | | - | NR |
| l | [| | | _ | . |
| color Before: | | Clarit | y Before: | | Texture: |
| color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |
| | | | | · · · · · · · · · · · · · · · · · · · | |
| <u> </u> | | | | | |
| | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| , Name: AQUA | TEC | Contract: 91082 | | | K40214F | |
|--------------|-------------|-----------------|-----------------|-----|-------------|------------------------------|
| b Code: AQUA | I_ Ca | se No.: BI | O SAS No.: | : _ | | SDG No.: 39962 |
| trix (soil/w | ater): FISH | | | La | ab Samp | ole ID: 215262 |
| vel (low/med |): LOW_ | _ | | Da | ate Rec | ceived: 10/12/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y v | weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - | | $-\left \frac{1}{NR}\right $ |
| | | Antimony | | - | | NR |
| | | Arsenic | | - | | NR |
| | 7440-39-3 | Barium | | | | NR |
| | | Beryllium | | | | NR |
| | | Cadmium_ | | | | NR |
| | 1 | Calcium_ | | _ | <u> </u> | NR |
| | | Chromium_ | | _ | | NR |
| | | Cobalt | | _ | | NR |
| | | Copper | | _ | | NR |
| | • · | Iron | | _ | | NR |
| | 7439-92-1 | Lead | | - | | NR |
| | | Magnesium | | _ | | NR |
| | | Manganese | 0.07 | _ | - XT- | NR |
| | | Mercury | 0.07 | - | 2 N* | - NR |
| | 7440-02-0 | Potassium | | _ | | - NR |
| | | Selenium | | - | | - NR |
| | | Silver | | - | | - NR |
| | | Sodium | | - | | - NR |
| | | Thallium | | - | J | - NR |
| | 7440-62-2 | Vanadium | | - | | - NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | | Cyanide | | - | | NR |
| | | | | | | |
| or Before: | | Clarit | ty Before: | | | Texture: |
| or After: | | Clarit | ty After: | | | Artifacts: |
| | | | | | _ | |
| ments: | | | | | | |
| | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: A | AQUATEC | | Contract: 9 | 108 | 2 | K40215F |
|-------------|------------------------|----------------------|-----------------|------------|---------------------------------------|----------------|
| | | | | | | SDG No.: 39962 |
| atrix (so | il/water): FIS | H_ | | La | b Sampl | e ID: 215264 |
| evel (low, | med): LOW_ | | | Da | te Rece | ived: 10/12/93 |
| Solids: | 100 | . 0 | | | | |
| | Concentration | units (ua | /L or mg/kg dry | v w | eight): | MG/KG |
| | | | | <i>.</i> " | | 1 |
| | CAS No. | Analyte | Concentration | c | Q | M |
| | 7429-90-5 | Aluminum | | - | | NR |
| | 7440-36-0 | | | | | NR |
| | 7440-38-2 | | | | | nr |
| | 7440-39-3 | | | | | NR |
| | 7440-41-7 | | | _ | | NR |
| | 7440-43-9 | | | _ | | NR |
| | 7440-70-2 | | | 1_1 | | NR |
| | 7440-47-3 | | | _ | | NR |
| | 7440-48-4 | | | 1_1 | | NR |
| | 7440-50-8 | | | _ | | NR |
| | 7439-89-6 | | | 1_1 | | NR |
| | 7439-92-1 | Lead | | 1-1 | | NR |
| | 7439-95-4 | Magnesium | | _ | | NR |
| | 7439-96-5 | | | _ | | NR |
| | 7439-97-6 | | 0.33 | _ | | CV |
| | 7440-02-0 | | | - | | NR |
| | 7440-09-7 | | | - | | NR NR |
| | 7782-49-2 7440-22-4 | Selenium_ Silver | | | | NR NR |
| | 7440-22-4 | | | - | | |
| | 7440-23-5 | | | - | | NR NR |
| | 7440-28-0 | Vanadium | | - | | NR NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | 1,440 00 0 | Cyanide | | - | | NR |
| | | | | | | |
| lor Befor | e: | Clari | ty Before: | | | Texture: |
| lor After | <u></u> | Clarit | ty After: | | | Artifacts: |
| mments: | | | | | | |
| | | | | | | |
| | | | | | · · · · · · · · · · · · · · · · · · · | |
| | | | | | | |
| | | | | | ··· ··· | |

FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

| ر Name: AQUA | TEC | | Contract: 91 | 1082 | K40216F |
|----------------|--|---|-----------------|------------|---|
| | | | SAS No.: | | SDG No.: 39962_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Sampl | e ID: 215266 |
| Level (low/med |): LOW | _ | | Date Rece | ived: 10/12/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-02-0 7440-22-4 7440-23-5 7440-28-0 7440-62-2 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver | | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before: | | Clarit | cy Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| MPLE | NO. |
|------|-------|
| | AMPLE |

| | | | MUDICES DATA | | | |
|----------------|------------------------|-----------------|-----------------|------------|-------------|-----------------|
| ر_ر Name: AQU | ATEC | | Contract: 91 | 108 | 32 | K40243F |
| ab Code: AQU | AI Ca | se No.: BIG | SAS No.: | : | | SDG No.: 39962 |
| atrix (soil/ | _ | | | _ | | le ID: 215268 |
| evel (low/med | i): Low | | | Da | te Rec | eived: 10/12/93 |
| SEAST (TOM) WE | _ | | | <i>D</i> . | | 21704. 10/12/33 |
| Solids: | 100. | 0 | | | | |
| Co | oncentration | Units (ug/ | 'L or mg/kg dry | , r | weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aliminim | | _ | | NR |
| | 7440-36-0 | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic - | | - | | NR |
| | 7440-39-3 | Barium — | | _ | | NR |
| | 7440-41-7 | Beryllium | | - | | NR |
| | | Cadmium_ | | | | NR |
| | | Calcium | | 1 | | NR |
| | | Chromium_ | | _ | | NR |
| | | Cobalt | | _ | | NR |
| | | Copper | | _ | | NR |
| | 7439-89-6 7439-92-1 | Iron | | _ | | NR NR |
| | 1 | Magnesium | | _ | | NR |
| | | Manganese | | - | | NR |
| | 7439-97-6 | Mercury | 0.08 | _ | J N* | CV |
| | | Nickel'- | | - | 7 | NR |
| | | Potassium | | _ | | NR |
| | | Selenium | | - | | NR |
| | 7440-22-4 | Silver - | | - | | ' NR |
| | 7440-23-5 | Sodium | | 1 | | NR |
| | | Thallium_ | | | | NR |
| | | Vanadium_ | | 1 | | NR |
| | 7440-66-6 | Zinc | | | | NR |
| | | Cyanide | | _ | | NR |
| | | ! | | | l | |
| olor Before: | | Clarit | y Before: | • | _ | Texture: |
| olor After: | | Clarit | y After: | | _ | Artifacts: |
| omments: | | | | | | |
| | | | | | | |
| | | | | | | |

ILM02.1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQU/ | ATEC | • | Contract: 9 | 1082 | K40246F |
|--------------|--------------|-----------|----------------|-----------------|-----------------|
| | | | | | SDG No.: 39962 |
| trix (soil/v | water): FISH | <u>_</u> | | Lab Sampl | e ID: 215270 |
| vel (low/med | i): Low_ | _ | | Date Rece | eived: 10/12/93 |
| Solids: | 100. | 0 | | | |
| Co | oncentration | Units (ug | /L or mg/kg dr | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | c Q | M |
| | | . | | _ | |
| • | 7429-90-5 | | | _ | NR |
| | 7440-36-0 | Antimony_ | | l - | NR . |
| | 7440-38-2 | Arsenic | |]_ | NR |
| | | | | _ | NR |
| | 7440-41-7 | | l | _ | NR |
| | 7440-43-9 | | | _ | NR |
| | 7440-70-2 | | | _ | NR |
| | 7440-47-3 | Chromium | | _ | NR |
| | 7440-48-4 | | | _ | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | Iron | | - | NR |
| | 7439-92-1 | Lead | | - | NR |
| | 7439-95-4 | Magnesium | | - | NR |
| | | Manganese | | | NR |
| | | Mercury | 0.07 | - 3 N* | CV |
| | | Nickel'- | | - - | NR |
| | 7440-09-7 | | | - | NR |
| | 7782-49-2 | | | - | NR |
| | 7440-22-4 | Silver | | - | NR |
| | 7440-23-5 | Sodium | | - | NR |
| | | | | - | |
| | 7440-28-0 | Thallium | | - | NR |
| | 7440-62-2 | Vanadium_ | | - | NR |
| | 7440-66-6 | Zinc | | _ | NR |
| | | Cyanide_ | | | NR |
| | | l | | !_ <u></u> | l <u></u> l |
| lor Before: | | Clarit | ty Before: | | Texture: |
| lor After: | | | ty After: | <u>•</u> | Artifacts: |
| mments: | | | | | |

FORM I - IN

ILM02.1

INORGANIC ANALYSES DATA SHEET

| Level (low/med): LOW Date Received: 10, % Solids: 100.0 Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. Analyte Concentration C Q M 7429-90-5 7440-36-0 7440-38-2 7440-39-3 Barium NR | : 39962 |
|---|---------|
| Level (low/med): LOW Date Received: 10, * Solids: 100.0 Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. Analyte Concentration C Q M 7429-90-5 7440-36-0 7440-38-2 7440-39-3 Barium NR | |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. Analyte Concentration C Q M 7429-90-5 Aluminum 7440-36-0 Antimony 7440-38-2 Arsenic NR 7440-39-3 Barium | 5272 |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. Analyte Concentration C Q M 7429-90-5 Aluminum 7440-36-0 Antimony 7440-38-2 Arsenic NR 7440-39-3 Barium | /12/93 |
| CAS No. Analyte Concentration C Q M 7429-90-5 Aluminum 7440-36-0 Antimony 7440-38-2 Arsenic NR 7440-39-3 Barium NR | |
| 7429-90-5 Aluminum NR 7440-36-0 Antimony NR 7440-38-2 Arsenic NR 7440-39-3 Barium NR | |
| 7440-36-0 Antimony | |
| 7440-36-0 Antimony | |
| 7440-38-2 Arsenic NR NR NR | |
| | |
| | |
| 7440-41-7 Beryllium NR | |
| 7440-43-9 Cadmium | |
| 7440-70-2 Calcium | |
| 7440-47-3 Chromium NR | |
| 7440-48-4 Cobalt NR | |
| 7440-50-8 Copper NR | |
| 7439-89-6 Iron NR NR NR NR NR NR NR N | |
| 7439-92-1 Lead NR NR NR | |
| 7439-96-5 Manganese NR | |
| 7439-97-6 Mercury | |
| 7440-02-0 Nickel NR | |
| 7440-09-7 Potassium NR | |
| 7782-49-2 Selenium NR | |
| 7440-22-4 Silver NR | |
| 7440-23-5 Sodium NR | |
| 7440-28-0 Thallium NR | |
| 7440-62-2 Vanadium NR | |
| 7440-66-6 Zinc NR | |
| Cyanide NR | |
| | |
| olor Before: Clarity Before: Texture: | |
| olor After: Clarity After: Artifact | |
| omments: | |

INORGANIC ANALYSES DATA SHEET

| | | INORGANIC A | analyses data s | SHEET | 1 |
|----------------|---|--|-----------------|-----------|--|
| Name: AQUA | TEC | | Contract: 91 | 1082 | K40375F |
| ab Code: AQUA | I_ Ca | se No.: BIG | SAS No.: | | SDG No.: 39962_ |
| ntrix (soil/wa | ater): FISH | _ | | Lab Samp | le ID: 215365 |
| evel (low/med) |): LOW_ | _ | | Date Rec | eived: 10/16/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 | Antimony_ Arsenic_ Barium_ Beryllium Cadmium | | | NR NR NR NR NR NR NR |
| | 7440-48-4 7440-50-8 7439-89-6 7439-92-1 | Copper Iron Lead | | | NR NR NR NR NR |
| | 7439-96-5 7439-97-6 | | 0.15 | | NR CV NR NR NR |
| | 7440-22-4 7440-23-5 7440-28-0 | SilverSodium_ Thallium_ Vanadium_ Zinc | | | NR NR NR NR NR NR |
| Non Rofesse | | Cyanide | | | |
| olor Before: | | | cy Before: | | Texture: |
| omments: | | CIGII | y Alcel. | | ALCITACES. |

INORGANIC ANALYSES DATA SHEET

| Name: AQU | JATEC | | Contract: 91 | 108 | 2 | K40387F |
|---------------|------------------------|----------------------|-----------------|--------------|----------|--------------------|
| Lab Code: AQI | JAI_ Ca | se No.: BI | SAS No. | : _ | | SDG No.: 39962_ |
| Matrix (soil, | /water): FISH | - | | La | b Sample | e ID: 215367 |
| Level (low/me | ed): LOW_ | | | Da | te Rece | ived: 10/16/93 |
| Solids: | 100. | 0 | | | | |
| | Concentration | Units (ug | /L or mg/kg dry | y w | eight): | MG/KG |
| | CAS No. | Analyte | Concentration | c | Q I | M . |
| | 5.400.00.5 | | | _ . | , | (198 5 |
| | 7429-90-5 | | | _ . | | NR I |
| | 7440-36-0 7440-38-2 | Antimony_ Arsenic | | - - | | NR NR |
| | 7440-39-3 | Barium | | - - | | NR |
| | 7440-41-7 | Beryllium | | - - | | NR |
| | 7440-43-9 | Cadmium | | - : | | NR |
| | 7440-70-2 | Calcium | | - : | | NR |
| | 7440-47-3 | Chromium | | - · | 1 | NR |
| | 7440-48-4 | Cobalt | | | | NR |
| | 7440-50-8 | Copper | | 121. | | NR |
| | 7439-89-6 | Iron | | _ . | | NR |
| | 7439-92-1 | Lead | | <u> </u> _ . | | NR |
| | 7439-95-4 | Magnesium | | _ . | | NR |
| | 7439-96-5 | Manganese | | _ . | | NR |
| | 7439-97-6 | Mercury_ | 0.13 | _ . | | CV |
| | 7440-02-0 7440-09-7 | Nickel Potassium | | - - | | NR NR |
| | 7782-49-2 | Selenium | | - - | | NR |
| | 7440-22-4 | Silver | | - - | | NR |
| | 7440-23-5 | Sodium | | - - | | NR |
| | 7440-28-0 | Thallium | | 1-1. | | NR |
| | 7440-62-2 | Vanadium | | - | | NR |
| | 7440-66-6 | Zinc | | - : | | NR |
| | | Cyanide | | | | NR |
| | | l | | |]. | |
| olor Before: | | Clarit | y Before: | | 1 | Texture: |
| olor After: | | Clarit | y After: | | | Artifacts: |
| omments: | | | | | | |
| | | | | | | |
| | | | | | | |
| | | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ر Name: AQUA | TEC | | Contract: 9: | 1082 | | K40388F |
|----------------|------------------------|------------|-----------------|--------------|-----------------|----------------|
| | | | | : | | SDG No.: 39962 |
| Matrix (soil/w | rater): FISH | · | | Lab | Sample | e ID: 215369 |
| Level (low/med | l): LOW_ | _ | | Dat | e Rece | ived: 10/16/93 |
| % Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug, | /L or mg/kg dry | y we | ight): | MG/KG |
| | CAS No. | Analyte | Concentration | c | Q I | M |
| | 7450 00 5 | | | _ _ | | |
| • | 7429-90-5 7440-36-0 | Antimony | |]-]- | | NR NR |
| ' | | Arsenic | | - - | | NR |
| | 7440-39-3 | Barium | | - - | | NR |
| | | Beryllium | | - - | | NR |
| | | Cadmium_ | | | | NR |
| | | Calcium_ | | | | NR |
| | | Chromium_ | | _ _ | | NR |
| | 7440-48-4 | Cobalt | | _ _ | | NR |
| | | Copper | | _ _ | | NR |
| | 7439-89-6 7439-92-1 | Iron | | <u> -</u> - | | NR |
| | | Magnesium | | - - | | NR NR |
| | 7439-95-4 | Manganese | | - - | | NR |
| | 7439-97-6 | Mercury | 0.13 | - = | | CV |
| | | Nickel - | | - - | - - | NR |
| | 7440-09-7 | Potassium | | - - | | NR |
| | 7782-49-2 | Selenium | | - - | | NR |
| | 7440-22-4 | Silver - | | - - | | NR |
| | 7440-23-5 | Sodium | | | | NR |
| | 7440-28-0 | Thallium_ | | 1212 | | NR |
| | 7440-62-2 | Vanadium_ | | _ _ | | NR |
| | 7440-66-6 | Zinc | | l_ - | | NR |
| | | Cyanide | | <u> - -</u> | | NR |
| Color Before: | | | y Before: | | | Texture: |
| Color After: | | Clarit | y After: | | | Artifacts: |
| Comments: | | | | | | |

FORM I - IN

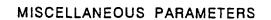
ILM02.1

1 INORGANIC ANALYSES DATA SHEET

| Name: AQUA | TEC | | Contract: 91 | 1082 | K40389F |
|----------------|------------------------|------------------------|-----------------------|------------------|-----------------|
| Lab Code: AQUA | I_ Ca | se No.: BI | SAS No.: | | SDG No.: 39962_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Sampl | le ID: 215371 |
| Level (low/med |): LOW_ | _ | | Date Rece | eived: 10/16/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | c Q | М |
| | 7429-90-5 | Aluminum | | | NR |
| | 7440-36-0 | Antimony - | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 7440-41-7 | Barium_ Beryllium | | | NR NR |
| | 7440-41-7 | Cadmium | | | NR |
| | 7440-70-2 | Calcium | | - | NR |
| | 7440-47-3 | Chromium | | - | NR |
| | 7440-48-4 | Cobalt | | | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | _ | NR |
| | 7439-95-4 7439-96-5 | Magnesium Manganese | | | NR NR |
| | | Mercury | 0.09 | _ <u>_ x_N*</u> | cv |
| | 7440-02-0 | Nickel - | | - - | NR |
| | 7440-09-7 | Potassium | · — — — · · · · · · — | - | NR |
| | 7782-49-2 | Selenium | | | NR |
| | 7440-22-4 | Silver | | | NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium_ | | - | NR NR |
| | 7440-62-2 7440-66-6 | Vanadium_ Zinc | | - | NR NR |
| | 7440 00 0 | Cyanide | | - | NR |
| | | | | | |
| Color Before: | | Clarit | y Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| Name: AQUA | TEC | | Contract: 91 | 1082 | K40390F |
|----------------|---|---------------------------------------|-----------------|-------------|---|
| Lab Code: AQUA | I_ Ca | se No.: BI | SAS No.: | | SDG No.: 39962_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Sampl | e ID: 215373 |
| Level (low/med |): LOW_ | _ | | Date Rece | ived: 10/16/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | c Q | M |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-95-4 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 | Calcium_ Chromium_ | 0.07 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| | 7440-23-5 7440-28-0 7440-62-2 7440-66-6 | Sodium Thallium Vanadium Zinc Cyanide | | | NR NR NR NR NR |
| Color Before: | | Clarit | y Before: | | Texture: |
| Color After: | | Clarit | y After: | | Artifacts: |
| Comments: | | | | | |



MISCELLANEOUS PARAMETERS

| | | | Fillet | % l | ipids |
|-----------|------------------|--------|--------|--------|-------|
| Sample (D | Description | Sex | Weight | Fillet | Body |
| K40196 | Small Mouth Bass | male | 154g | 1.37 | 8.80 |
| K40197 | Small Mouth Bass | male | 106g | 0.52 | 4.50 |
| K40198 | Small Mouth Bass | female | 107g | 0.94 | 11.3 |
| K40199 | Small Mouth Bass | female | 93g | 0.80 | 9.80 |
| K40200 | Small Mouth Bass | male | 88g | 0.69 | 3.00 |
| K40213 | Small Mouth Bass | male | 131g | 0.66 | 4.00 |
| K40214 | Small Mouth Bass | male | 102g | 1.06 | 7.00 |
| K40215 | Small Mouth Bass | female | 264g | 0.73 | 5.50 |
| K40216 | Small Mouth Bass | male | 417g | 0.73 | 5.00 |
| K40243 | Small Mouth Bass | female | 228g | 1.02 | 6.20 |
| K40246 | Small Mouth Bass | female | 266g | 1.99 | 7.00 |
| K40247 | Small Mouth Bass | male | 240g | 0.82 | 3.90 |
| K40375 | Small Mouth Bass | female | 167g | 0.81 | 3.65 |
| K40387 | Small Mouth Bass | female | 142g | 0.55 | 2.05 |
| K40388 | Small Mouth Bass | female | 133g | 0.49 | 2.54 |
| K40389 | Small Mouth Bass | male | 103g | 0.58 | 1.00 |
| K40390 | Small Mouth Bass | male | 111g | 1.41 | 3.05 |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39963

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

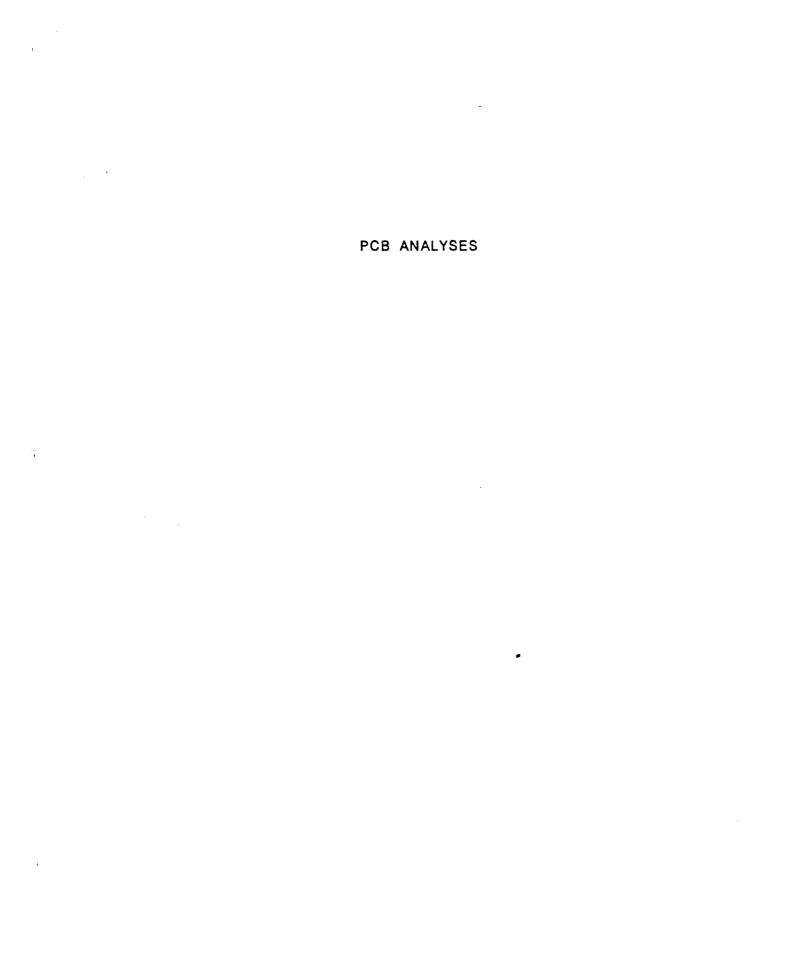
Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data for SDG# 39963 for the Blota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

| Sample ID | Lab ID | Species Description Sample Location | | Anaty | sis | |
|-----------|--------|-------------------------------------|------------|-------------------|-----------------|--------|
| | | | | | Pest/PCB /Hg | %Lipid |
| K40217W | 200491 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40218W | 200492 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40219W | 200493 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40220W | 200494 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40221W | 200495 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40222W | 200496 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40223W | 200497 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40224W | 200498 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40225W | 200499 | Spotted Sucker | whole body | Below Allegan Dam | x | × |
| K40226W* | 200500 | Spotted Sucker | whole body | Below Allegan Dam | × | x |
| K40227W | 215501 | Spotted Sucker | whole body | Below Allegan Dam | × | × |

MS/MSD/DUP performed on sample



Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

<u>Identification</u>

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in sample K40223W. All data for this sample have been qualified as estimated due to the deviation. Surrogate recoveries were below acceptable control limits for one surrogate in samples K40217W, K40218W, K40219W, K40220W, K40225, WK40225W, K40226W, and K40226WMSD. No qualifiers have been added to these samples based on surrogate recovery. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA_ |
|--|----------|----|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | <u> </u> | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | · |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | × | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| _ 0 out of _ 2 | | | |
| Blanks | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | × | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | X | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-----|-------------|----|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | x | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | x | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | X | - | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | <u>.</u> | |
| Aroclor 1254 | X | | |
| Instrument Blanks | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | × | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|-----------|----|----|
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | <u> </u> | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u> </u> | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | <u> x</u> | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Lin | nits | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | x | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates - Column 2 | | |
|------------|------------|------------|------------|-----------------------|---------------|--|
| | Time | тсх | DCB | тсх | DCB | |
| K40217W | OK for all | ↓ (46) | | ↓ (48) | | |
| K40218W | samples | ↓ (54) | | ↓ (55) | | |
| K40219W | | ↓ (52) | | ↓ (53) | | |
| K40220W | | ↓ (58) | | | | |
| K40221W | | | | · | | |
| K40222W | | ↓ (59) | | | | |
| K40223W | | ↓ (45) | ↓ (51) | ↓ (46) | ↓ (51) | |
| K40224W | | | | | | |
| K40225W | | ↓ (58) | | ↓ (58) | | |
| K40226W | | ↓ (58) | | ↓ (59) | | |
| K40226WMS | | | | | | |
| K40226WMSD | | ↓ (59) | | | | |
| K40227W | | | | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high

Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 5/10/94 1845 | 5/11 | 5/12 | 5/12 | 5/12 | 5/16 | 5/16 |
|----------------------|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | to 5/11/94 1334 | 2327 | 0000 | 0640 | 0713 | 1430 | 1503 |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | %D | %D | % D | %D |
| Arocior 1016 | 4.6 / 4.6 | | 8.5 | | | | |
| Aroclor 1221 | 3.9 / 3.9 | | | | | | |
| Aroclor 1232 | 3.2 / 3.7 | | | | | | |
| Aroclor 1242 | 2.7 / 2.8 | | | | 2.5 | | |
| Aroclor 1248 | 3.2 / 2.7 | 2.0 | | 3.0 | | 2.0 | |
| Aroclor 1254 | 2.8 / 2.8 | | | | | : | |
| Aroclor 1260 | 3.5 / 2.7 | | | | | | 1.5 |
| Tetrachloro-m-xylene | 4.9 / 3.6 | | | | | | |
| Decachlorobiphenyl | 8.6 / 9.2 | | | | | | |
| Affected Samples: | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 5/18 | 5/16 | | | | grafika 4 |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 2122 | 2155 | | | | |
| , | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal, | Cont. Cal. |
| | %RSD | %D | % D | %D | % D | % D | %D |
| Aroclor 1016 | | | 7.0 | | | | |
| Aroclor 1221 | | | | | | | |
| Aroclor 1232 | <u> </u> | | | | | | |
| Aroclor 1242 | | | | | | | |
| Arocior 1248 | | 1.0 | | | | | |
| Aroclor 1254 | | | | | | | |
| Aroclor 1260 | | | | | | | |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | _ | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

EPA SAMPLE NO. K40217W Lab Code: Lab Name: Aquatec, Inc. AQUAI 91082 SDG: 39963 Case: BIO Contract: Phase Type: **BIOTA** Lab Sample ID: 200491 10.0 Phase Weight: 10/12/93 Date Received: (g) 04/12/94 Injection Volume: 1.0 (uL) Date Extracted: 1.0 Dilution Factor: ___ Date Analyzed: 05/16/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.083 | |
| 11096-82-5 | Araclar-1260 | 0.051 | |

EPA SAMPLE NO. K40218W Lab Code: Lab Name: Aquatec, Inc. AQUAI 91082 SDG: 39963 Case: BIO ,Contract: **BIOTA** Lab Sample ID: 200492 Phase Type: 10.0 Date Received: 10/12/93 Phase Weight: (g) 1.0 Date Extracted: 04/12/94 Injection Volume: __ (uL) 1.0 Date Analyzed: 05/16/94 Dilution Factor: Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|----|
| 12674-11-2 | Aroclor-1016 | 0.050 | _U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.18 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.17 | |
| 11096-82-5 | Aroclor-1260 | 0.068 | |

EPA SAMPLE NO. K40219W Lab Name: Aquatec, Inc. Lab Code: **AQUAI** 91082 39963 Contract: Case: BIO SDG: Phase Type: **BIOTA** Lab Sample ID: 200493 10.0 Phase Weight: (g) **Date Received:** 10/12/93 Injection Volume: 1.0 04/12/94 (uL) Date Extracted: Dilution Factor: 1.0 Date Analyzed: 05/16/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | Ų |
| 11104-28-2 | Aroclor-1221 | 0.050 | ι |
| 11141-16-5 | Aroclor-1232 | 0.050 | ι |
| 53469-21-9 | Aroclor-1242 | 0.050 | Į |
| 12672-29-6 | Aroclor-1248 | 0.26 | |
| 11097-69-1 | Arocior-1254 | 0.22 | |
| 11096-82-5 | Araclar-1260 | 0.050 | |

EPA SAMPLE NO. K40220W Lab Code: **IAUDA** Lab Name: Aquatec, Inc. Contract: 91082 BIO SDG: 39963 Case: Phase Type: **BIOTA** Lab Sample ID: 200494 Phase Weight: 10.0 (g) Date Received: 10/12/93 Injection Volume: 1.0 (uL) Date Extracted: 04/12/94 Dilution Factor: 1.0 05/16/94 Date Analyzed: Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Arocior-1242 | 0.050 | U |
| 12672-29-6 | Arocior-1248 | 0.030 | J |
| 11097-69-1 | Aroclor-1254 | 0.068 | |
| 11096-82-5 | Aroclor-1260 | 0.039 | J |

EPA SAMPLE NO. K40221W Lab Code: IAUDA Lab Name: Aquatec, Inc. 39963 91082 BIO SDG: Contract Case: Phase Type: **BIOTA** Lab Sample ID: 200495 Phase Weight: 10.0 (g) Date Received: 10/12/93 Date Extracted: Injection Volume: 1.0 (uL) 04/12/94 1.0 Date Analyzed: Dilution Factor: 05/12/94 (Y/N) Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aracior-1242 | 0.050 | Ų |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.25 | |
| 11096-82-5 | Aroclor-1260 | 0.031 | J |

EPA SAMPLE NO. K40222W Lab Name: Aquatec, Inc. Lab Code: **AQUAI** SDG: __ 91082 39963 Contract: Case: BIO Lab Sample ID: 200496 Phase Type: **BIOTA** Phase Weight: 10.0 (g) Date Received: 10/12/93 Injection Volume: 1.0 (uL) Date Extracted: 04/12/94 Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclar-1016 | 0.050 | u |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.64 | |
| 11097-69-1 | Arocior-1254 | 0.28 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40223W Lab Code: **AQUAI** Lab Name: Aquatec, Inc. 91082 Case: _ BIO SDG: __ 39963 Contract: Lab Sample ID: 200497 Phase Type: **BIOTA** Date Received: 10/12/93 Phase Weight: 10.0 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/12/94 Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u> </u> |
|------------|--------------|-----------------------|--------------|
| 12674-11-2 | Aroclor-1016 | 0.050 | UJ |
| 11104-28-2 | Aroclor-1221 | 0.050 | UJ |
| 11141-16-5 | Aroclor-1232 | 0.050 | UJ |
| 53469-21-9 | Aroclor-1242 | 0.050 | UJ |
| 12672-29-6 | Arocior-1248 | 0.050 | UJ |
| 11097-69-1 | Aroclor-1254 | 0.15 | . |
| 11096-82-5 | Aroclor-1260 | 0.022 | J |

EPA SAMPLE NO. K40224W Lab Name: Aquatec, Inc. Lab Code: AQUAI BIO SDG: 39963 91082 Case: Contract: **BIOTA** Lab Sample ID: 200498 Phase Type: Date Received: Phase Weight: 10.0 (g) 10/12/93 Injection Volume: 1.0 (uL) Date Extracted: 04/12/94 Dilution Factor: __ Date Analyzed: 05/12/94 1.0 Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Arocior-1242 | 0.066 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.17 | |
| 11096-82-5 | Aroclor-1260 | 0.030 | J |

(Y/N)

EPA SAMPLE NO. K40225W Lab Code: AQUAI Lab Name: Aquatec, Inc. 91082 SDG: 39963 Contract: Case: BIO **BIOTA** Phase Type: Lab Sample ID: 200499 10.0 Phase Weight: (g) Date Received: 10/12/93 Injection Volume: 1.0 (uL) Date Extracted: 04/12/94 Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | | | |
|------------|--------------|-----------------------|---|--|--|
| 12674-11-2 | Arocior-1016 | 0.050 | U | | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U | | |
| 11141-16-5 | Aroclor-1232 | 0.050 | U | | |
| 53469-21-9 | Aroclor-1242 | 0.031 | J | | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U | | |
| 11097-69-1 | Aroclor-1254 | 0.17 | | | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U | | |

N

EPA SAMPLE NO. K40226W Lab Code: **AQUAI** Lab Name: Aquatec, inc. 39963 91082 Case: BIO SDG: Contract: Lab Sample ID: 200500 Phase Type: **BIOTA** 10.0 Date Received: 10/12/93 Phase Weight: (g) (uL) Date Extracted: 04/12/94 Injection Volume: 1.0 1.0 Dilution Factor: Date Analyzed: 05/12/94 Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u> </u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aracior-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.12 | |
| 11096-82-5 | Araclar-1260 | 0.047 | J |

(Y/N)

EPA SAMPLE NO. K40227W Lab Name: Aquatec, Inc. Lab Code: AQUAI Contract: SDG: 39963 91082 Case: BIO **BIOTA** Lab Sample ID: 200501 Phase Type: 10.0 Date Received: 10/12/93 Phase Weight: (g) 1.0 Date Extracted: 04/12/94 Injection Volume: (uL) Dilution Factor: 1.0 Date Analyzed: 05/12/94 Sulfur Clean-up: N (Y/N)

| CAS NO. COMPOUND | | CONCENTRATION (mg/Kg) | _0 |
|------------------|--------------|-----------------------|----|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Arocior-1221 | 0.050 | U |
| 11141-16-5 | Arocior-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.15 | |
| 11097-69-1 | Aroclor-1254 | 0.43 | - |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

7

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in samples K40217W, K40219W, K40220W, K40221W, K40222W, K40223W, K40224W, K40225W and K40226W. All data for these samples have been qualified as estimated due to the deviation. Recoveries were below control limits for one surrogate in samples K40218W K40226WMS, K40226WMSD, and K40227W. No qualifiers have been added to these samples based on surrogate performance. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40218W | 4,4'-DDE | 30.8% |
|---------|---|--------------------------|
| K40219W | Heptachlor Epoxide 4,4'-DDE cis-Nonachlor | 60.0% 31.3% 292.2% |
| K40222W | 4,4'-DDE cis-Nonachlor | 40.0% 265.1% |
| K40227W | cis-Nonachlor | 263.6% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent differences (RPDs) between recoveries were within acceptable control limits. All recoveries in the matrix spike blank were also within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

Data Validation Checksheets

Pesticide Data Validation Checklist

| | YES | NO | NA NA |
|--|----------|----------|---------------------------------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | <u> </u> | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u> </u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | x | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | x | | |
| If yes, were the samples reanalyzed? | | X | |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | <u> </u> | · · · · · · · · · · · · · · · · · · · |
| O out of8 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | x | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|----------|--------------|---------------------------------------|
| Is the chromatographic performance acceptable for each instrument? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any trip/field/rinse blanks have positive results? | | | <u> </u> |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts presblanks, and MS/MSD? | ent for | all samples, | |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | | |
| Toxaphene multipoint calibration | X | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | <u>X</u> | | · · · · · · · · · · · · · · · · · · · |
| Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | <u>X</u> | | |
| Is Form VII-1 present for each BCS analyzed for both columns? | x | | |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | | X | |
| Is Form VII-2 present and complete for each mid-point standard analyzed? | X | | |
| Are RPD values for all compounds < 25%? | X | | |

Analytical Sequence Check

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA |
|---|-----|-------------|-------------|
| Is Form VIII present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | X | | |
| Are all samples listed on the form? | X | | |
| If GPC cleanup was performed, is Form IX-2 present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | X | | |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| Is a Form X present for every sample in which a pesticide or PCB was detected? | X | | |
| Was GC/MS confirmation provided when required? | | | X |
| ls the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | X | |
| Were there any false negatives? | | × | |
| Compound Quantitation and Reported Detection Limi | ts | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates - Column 2 | | |
|------------|------------|------------|---------------|-----------------------|---------|--|
| | Time | тсх | DCB | тсх | DCB | |
| K40217W | OK for all | ↓ (48) | ↓ (51) | ↓ (42) | ОК | |
| K40218W | samples | ↓ (48) | | ↓ (45) | | |
| K40219W | | ↓ (48) | ↓ (56) | ↓ (43) | | |
| K40220W | | ↓ (48) | ↓ (56) | ↓ (45) | | |
| K40221W | | ↓ (48) | ↓ (58) | ↓ (40) | | |
| K40222W | | ↓ (48) | ↓ (59) | ↓ (43) | | |
| K40223W | | ↓ (48) | ↓ (55) | ↓ (40) | | |
| K40224W | | ↓ (48) | ↓ (59) | ↓ (47) | <u></u> | |
| K40225W | | ↓ (48) | ↓ (55) | ↓ (39) | | |
| K40226W | | ↓ (48) | ↓ (54) | ↓ (38) | | |
| K40226WMS | | | | ↓ (44) | | |
| K40226WMSD | | | | ↓ (38) | | |
| K40227W | | ↓ (48) | | ↓ (40) | | |

TCX Tetrachioro-m-xylene DCB Decachlorobiphenyl

D Surrogate diluted out

Recovery high Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: <u>HP2618</u> Column: <u>RTX-5</u>

| Date: | 5/18/94 | 5/19 | | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 22:43 | 12:07 | | | | | |
| • | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %ASD | %D | % D | % D | %D | %D | % D |
| 2-Bromobiphenyl | ok | ok | | ! | | | |
| 3-Bromobiphenyl | | | | | <u> </u> | | ļ |
| 4-Bromobiphenyl | | | | | <u> </u> | | |
| Hexachlorobenzene | | | | | <u> </u> | | |
| gamma-BHC (Lindane) | · | | | | | | |
| Aldrin | · | | | | | | |
| Heptaclor epoxide | · | | | | | | |
| gamma-Chlordane | | | | | | | . <u>.</u> . |
| aipha-Chiordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | <u> </u> |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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| | | | | | 1 | | |

Pesticide/PBB Calibration Summary - Page 2

Instrument: <u>HP2618</u> Column: <u>RTX-35</u>

| Date: | 5/18/94 | 5/1.9 | | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 22:43 | 12:07 | | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %ASD | %D | % D |
| 2-Bromobiphenyl | ok | ok | | | | | |
| 3-Bromobiphenyl | | | | | | | <u> </u> |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | | | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | ··· | | | <u> </u> | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | <u> </u> |
| Tetrachioro-m-xylene | | | | | • | | |
| Decachlorobiphenyl | - | | | | | | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 3

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 5/19/94 | 5/20 | | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 22:08 | 11:31 | | | | | |
| | initial Cal: | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cel. |
| | %RSD | % D | % D | %D | % D | % D | % D |
| 2-Bromobiphenyl | ok | ok | | | | | |
| 3-Bromobiphenyl | , | | <u> </u> | | | | |
| 4-Bromobiphenyl | | | | <u> </u> | | | |
| Hexachiorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chlordane | | | | | | | |
| trans-Nonachlor | | | | | | | |
| 4,4'-DDE | · | | | | | | |
| Dieldrin | · | | | | | | |
| 4,4'-DDD | | | | <u> -</u> | | ļ | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | <u> </u> | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | <u> </u> | <u> </u> | <u> </u> | |
| Tetrachloro-m-xylene | | | | | . | | |
| Decachlorobiphenyl | | | | <u></u> | | | |
| Affected Samples: | | | | | | | |
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Pesticide/PBB Calibration Summary - Page 4

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/19/94 | 5/20 | | | | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 22:08 | 11:31 | | | | | |
| | initial Cal. | Cont. Cal. | Gont. Gal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | %D | % D | % D | %D | % D |
| 2-Bromobiphenyl | ok | ok | | | | | |
| 3-Bromobiphenyl | | | | <u> </u> | | | |
| 4-Bromobiphenyl | | | | <u> </u> | | | |
| Hexachlorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | <u> </u> | | <u> </u> | : : |
| gamma-Chiordane | | | | | | | |
| aipha-Chiordane | | | | | | | <u> </u> |
| trans-Nonachlor | | | | | <u> </u> | | |
| 4,4'-DDE | | | | <u> </u> | | | |
| Dieldrin | | | | | | <u> </u> | |
| 4,4'-DDD | | | | | | <u> </u> | |
| cis-Nonachlor | | | | | <u></u> | <u> </u> | |
| 4,4'-DDT | | | | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachioro-m-xylene | | | | | • | ļ | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
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Corrected Sample Analysis Data Sheets

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40217W

39963

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 200491

Date Received: 10/12/93

Date Extracted: 04/12/94

Date Analyzed: 05/19/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υŢ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | リナ |
| 58-89-9 | gamma-BHC | 0.0050 | UT |
| 309-00-2 | Aldrin | 0.0050 | UJ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UT |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UT |
| 72-55-9 | 4,4'-DDE | 0.010 | リナ |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UT |
| 50-29-3 | 4,4'-DDT | 0.010 | UT |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ |
| 8001-35-2 | Toxaphene | 0.20 | UJ |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40218W

39963

Phase Type:

Phase Weight:

Extraction:

Dilution Factor:

Biota

10.0 g

Soxhlet

1.0

Lab Sample ID: 200492
Date Received: 10/12/93
Date Extracted: 04/12/94
Date Analyzed: 05/19/94
Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ |
|------------|--------------------|-----------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ū |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | Ū |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0058 | |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | Ū |
| 39765-80-5 | trans-Nonachlor | 0.0050 | Ū |
| 72-55-9 | 4,4'-DDE | 0.013 | J J |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | Ū |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Soxhlet

1.0

Extraction:

Dilution Factor:

K40219W Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 Contract: BIO SDG: 39963 Case: _ 200493 Lab Sample ID: 10/12/93 Phase Type: Date Received: **Biota** 04/12/94 Phase Weight: 10.0 Date Extracted:

Date Analyzed:

Sulfur Clean-up:

Client ID No.

05/19/94

N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q. | |
|------------|--------------------|-----------------------|------|------------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | LU | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UJ. | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | UJ | |
| 58-89-9 | gamma-BHC | 0.0050 | UJ | |
| 309-00-2 | Aldrin | 0.0050 | UJ | |
| 1024-57-3 | Heptachlor Epoxide | 0.0075 | VII. | |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ | |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ | |
| 72-55-9 | 4,4'-DDE | 0.016 | JN | |
| 60-57-1 | Dieldrin | 0.010 | UJ | |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ | |
| 5103 73 1 | eis Nonachler | 0.0051 | | - <u>R</u> |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ | • |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ | |
| 8001-35-2 | Toxaphene | 0.20 | UJ | |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40220W

39963

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200494

 Date Received:
 10/12/93

 Date Extracted:
 04/12/94

 Date Analyzed:
 05/19/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | リブ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ü |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | UJ |
| 58-89-9 | gamma-BHC | 0.0050 | UJ |
| 309-00-2 | Aldrin | 0.0050 | UI |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UT |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.010 | U |
| 60-57-1 | Dieldrin | 0.010 | リナ |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UT |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ |
| 8001-35-2 | Toxaphene | 0.20 | UT |

 Lab Name:
 Aquatec, Inc.
 K40221W

 Lab Code:
 AQUAI
 Contract:
 91082

 Case:
 BIO
 SDG:
 39963

 Lab Sample ID:
 200495

Client ID No.

| | | Lab Sample ID: | 200495 |
|------------------|---------|------------------|----------|
| Phase Type: | Biota | Date Received: | 10/12/93 |
| Phase Weight: | 10.0 g | Date Extracted: | 04/12/94 |
| Extraction: | Soxhlet | Date Analyzed: | 05/19/94 |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N |
| | | | |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UJ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | TU |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U.T |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | UT |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | Tu |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.013 | 丁 |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.010 | J. U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | リナ |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ |
| 8001-35-2 | Toxaphene | 0.20 | UJ |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40222W

39963

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 200496

Date Received: 10/12/93

Date Extracted: 04/12/94

Date Analyzed: 05/19/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UJ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachiorobenzene | 0.0050 | υJ |
| 58-89-9 | gamma-BHC | 0.0050 | UJ |
| 309-00-2 | Aldrin | 0.0050 | リブ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.019 | プ |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ |
| 5103-73-1 | eis-Nonachlor | 0.0063 | |
| 50-29-3 | 4,4'-DDT | 0.010 | UT |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ |
| 8001-35-2 | Toxaphene | 0.20 | UJ |

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 Lab Name:
 Aquatec, Inc.
 K40223W

 Lab Code:
 AQUAI

 Contract:
 91082

 Case:
 BIO

 SDG:
 39963

 Phase Type:
 Biota

 Lab Sample ID:
 200497

 Date Received:
 10/12/93

Client ID No.

| | | Lab Sample ID: | 200497 |
|------------------|---------|------------------|----------|
| Phase Type: | Biota | Date Received: | 10/12/93 |
| Phase Weight: | 10.0 g | Date Extracted: | 04/12/94 |
| Extraction: | Soxhlet | Date Analyzed: | 05/19/94 |
| Dilution Factor: | 1.0 | Sulfur Clean-up: | N |
| - | | | |

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UJ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | リナ |
| 58-89-9 | gamma-BHC | 0.0050 | UJ |
| 309-00-2 | Aldrin | 0.0050 | リナ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UJ |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UT |
| 5103-71-9 | alpha-Chlordane | 0.0050 | UJ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.013 | プ |
| 60-57-1 | Dieldrin | 0.010 | リナ |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UJ |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UJ |
| 8001-35-2 | Toxaphene | 0.20 | UJ |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40224W

39963

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200498

 Date Received:
 10/12/93

 Date Extracted:
 04/12/94

 Date Analyzed:
 05/19/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UT |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UJ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | UT |
| 58-89-9 | gamma-BHC | 0.0050 | UJ |
| 309-00-2 | Aldrin | 0.0050 | UJ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UJ |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UT |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.010 | UT |
| 60-57-1 | Dieldrin | 0.010 | リリブ |
| 72-54-8 | 4,4'-DDD | 0.010 | リブ |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UJ |
| 50-29-3 | 4,4'-DDT | 0.010 | UT |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | UT |
| 8001-35-2 | Toxaphene | 0.20 | UT |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40225W

39963

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200499

Date Received: 10/12/93

Date Extracted: 04/12/94

Date Analyzed: 05/19/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | UT |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | UJ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | υō |
| 58-89-9 | gamma-BHC | 0.0050 | リナ |
| 309-00-2 | Aldrin | 0.0050 | UJ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U .j |
| 5103-71-9 | alpha-Chlordane | 0.0050 | リナ |
| 39765-80-5 | trans-Nonachior | 0.0050 | リナ |
| 72-55-9 | 4,4'-DDE | 0.010 | UJ |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.010 | UJ |
| 5103-73-1 | cis-Nonachlor | 0.0050 | リナ |
| 50-29-3 | 4,4'-DDT | 0.010 | υŚ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | リン |
| 8001-35-2 | Toxaphene | 0.20 | リナ |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40226W

SDG: 39963

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200500

 Date Received:
 10/12/93

 Date Extracted:
 04/12/94

 Date Analyzed:
 05/20/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | リナ |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | リナ |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | UJ |
| 309-00-2 | Aldrin | 0.0050 | UT |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UJ |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ |
| 5103-71-9 | alpha-Chlordane | 0.0050 | リナ |
| 39765-80-5 | trans-Nonachior | 0.0050 | リナ |
| 72-55-9 | 4,4'-DDE | 0.012 | |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UT |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.

SDG: 39963

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200501
Date Received: 10/12/93
Date Extracted: 04/12/94
Date Analyzed: 05/20/94
Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U · |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | aipha-Chiordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.016 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0055 | 1 |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- Duplicate analysis not within control limits.
- + Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was within acceptable limits.

4.2 Laboratory Duplicate

The difference between laboratory duplicates was within specified limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.



Inorganic Data Validation Checklist

| | YES | NO | NA |
|--|-------------|-------------|-------------|
| Data Completeness and Deliverables | | | |
| is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | X | | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | \ <u> </u> |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| Is the distillation log for cyanides present? | | | × |
| Are preparation dates present on sample preparation logs/bench sheets? | X | | |
| Are the measurement read out records present for: | | | |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | X |
| Mercury | X | | |
| Cyanides | | | X |
| Is the data legible? | X | | |
| Is the data properly labeled? | X | | |
| Holding Times | - | | |
| Were mercury analyses performed within 28 days? | X | | |
| | | | |

| | YES | NO | NA |
|---|-------------|-------------|-------------|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | X | | |
| Are correct units indicated on Form I's? | <u> </u> | | |
| Are all "less than IDL" values properly coded with "U"? | <u> </u> | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | |
| Calibration | | | |
| Is a record of at least 2 point calibration present for ICP analysis? | | | X |
| Is a record of 5 point calibration present for Hg analysis? | X | | |
| ls a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | | | X |
| Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | X |
| ls correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verifica | ation) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | X | | |
| Cyanides (85-115 %R)? | | | X |

| | YES | NO | NA |
|--|-----|----|----|
| Was continuing calibration performed every 10 samples or every 2 hours? | × | | |
| Was the ICV for cyanides distilled? | | | X |
| Form II B (CRDL Standards for AA and ICP) | | | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed tor cyanide analysis? | | | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | X | | |
| Is mid-range standard within control limits for cyanide (80-120 %R) | | | X |
| Form III (Initial and Continuing Calibration Blanks) | | | |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | X | - | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | | | × |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | × | | |
| each matrix type? | X | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | × | |

| | YES | NO | NA |
|--|----------|-------------|-------------|
| If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | | X |
| Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL? | | | X |
| Is concentration of prep. blank below the negative CRDL? | | X | |
| Form IV (ICP Interference Check Sample) | | | |
| Present and complete? | | | X |
| Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | | | X |
| Are all Interference Check Sample results inside the control limits (±20%)? | | | X |
| If no, is concentration of AI, Ca, Fe, or Mg lower than the respective concentration in ICS? | | | X |
| Form V A (Spiked Sample Recovery - Pre-Digestion/P | re-Disti | liation) | |
| Present and complete for: | | | |
| each SDG? | X | | |
| each matrix type? | X | | |
| Was field blank used for spiked sample? | | X | |
| Are all recoveries within control limits (75-125)? | X | | |
| If no, is sample concentration greater than or equal to four times spike concentration? | | | X |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | | | X |
| Are any spike recoveries: | | | |
| less than 10%? | | X | |
| between 10-74%? | | X | |
| between 126-200%? | | X | |
| greater than 200%? | | X | |
| Form VI (Lab Duplicates) | | | |
| Present and complete for: | | | |
| each SDG? | X | | |

| | YES | NO | NA |
|---|---|-------------|-------------|
| each matrix type? | X | | |
| Was field blank used for duplicate analysis? | | X | |
| Are all values within control limits (RPD 20% or difference ≤ ±CRDL)? | X | | |
| If no, are all results outside the control limits flagged with an * on Form I's and VI? | • | | X |
| is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%? | | | X |
| Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL? | | X | |
| Form VII (Laboratory Control Sample) | | | |
| Was one LCS prepared and analyzed for: | | | |
| each SDG? | X | | |
| each batch samples digested/distilled? | X | | |
| Is LLCS "Found" value higher than the control limits on Form VII? | | X | |
| Is LCS "Found" lower than the control limits on Form VII? | | × | |
| Form IX (ICP Serial Dilution) | *************************************** | | |
| Was Serial Dilution analysis performed for: | | | |
| each SDG? | | | X |
| each matrix type? | | | X |
| Was field blank(s) used for Serial Dilution Analysis? | | | X |
| Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | | | X |
| Are any % difference values: | | | |
| > 10%? | | | X |
| ≥100%? | | | × |
| Furnace Atomic Absorption (AA) QC Analysis | | | |
| Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA? | | | <u> </u> |

| | YES | NO | NA |
|--|----------|----------|-------|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| Is analytical spike recovery outside the control limits (85-115%) for any sample? | | | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | <u>X</u> | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | X |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | X |
| Field Blank | | | |
| Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | X |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | <u>X</u> | | |
| all the instruments used? | X | | |

| | YES | NO | NA |
|---|-----|----------|-------|
| Is IDL greater than CRDL for any analyte? | | <u> </u> | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | | | x |
| Was any sample result higher linear range of ICP. | | | X |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | X | |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | | | X |
| | | - | |

Corrected Sample Analysis Data Sheets

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | | MADISES DATA | | |
|----------------|-------------------------|-----------------------|-----------------|-------------|-----------------------|
| ıb Name: AQUA | TEC | | Contract: 91 | L082 | K40217W |
| • | | | | | SDG No.: 39963 |
| Matrix (soil/w | _ | , | | | - nple ID: 200491 |
| Level (low/med |): LOW_ | | | Date Re | eceived: 10/12/93 |
| & Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug/ | /L or mg/kg dry | y weight | :): MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | - | $- _{\overline{NR}} $ |
| | 7440-36-0 | Antimony_ | | | NR |
| | | ArsenicBarium | | _ | NR NR |
| | 7440-39-3 7440-41-7 | Beryllium | | - | - NR |
| | 7440-43-9 | Cadmium | | - | - NR |
| | 7440-70-2 | Calcium_ | | | NR |
| | | Chromium_ | | | NR NR |
| | 7 | Cobalt | | _ | NR NR |
| | 7440-50-8 7439-89-6 | Copper | | - | NR NR |
| | | Lead | | - | - NR |
| | | Magnesium | | - | NR |
| | 7439-96-5 | Manganese | | | NR NR |
| | | Mercury | 0.04 | | |
| | | Nickel | | <u> - </u> | NR NR |
| | 7440-09-7 7782-49-2 | Potassium Selenium | | - | - NR |
| | | Silver | | - | - NR |
| | 7440-23-5 | Sodium | | - | - NR |
| | | Thallium_ | | | NR |
| | 7440-62-2 | Vanadium_ | | _ | NR |
| | 7440-66-6 | Zinc Cyanide | | - | NR NR |
| | | | | | |
| color Before: | | Clarit | ty Before: | | Texture: |
| color After: | | Clarit | ty After: | | Artifacts: |
| | | | | | |

1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| Case No.: BIO | | |
|---|---|------------|
| Lab Code: AQUAI | lame: AQUATE | (40218W |
| Lab Sample ID: 2004 Low Date Received: 10/1 | | No.: 39963 |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG CAS No. | | |
| CAS No. | (low/med): | 10/12/93 |
| CAS No. | ids: | |
| 7429-90-5 Aluminum NR 7440-36-0 Antimony NR 7440-38-2 Arsenic NR 7440-39-3 Barium NR 7440-41-7 Beryllium NR 7440-43-9 Cadmium NR 7440-47-3 Chromium NR 7440-48-4 Cobalt NR 7439-89-6 Iron NR 7439-92-1 Lead NR 7439-95-4 Magnesium NR 7439-97-6 Mercury 0.04 CV 7440-02-0 Nickel NR 7440-22-4 Selenium NR 7440-23-5 Sodium NR 7440-28-0 Thallium NR | Conc | (G |
| 7440-36-0 Antimony | c | |
| 7440-62-2 Vanadium | 777777777777777777777777777777777777777 | |
| Color Before: Clarity Before: Texture: | Before: _ | ure: |
| Color After: Clarity After: Artifacts: | After: _ | facts: |
| Comments: | ents: | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ر Name: AQUA | TEC | | Contract: 9: | 1082 | K40219W |
|----------------|---|---|-------------------------|-----------|--|
| _ | | | | | SDG No.: 39963_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Samp | ole ID: 200493 |
| Level (low/med |): LOW_ | - | | Date Rec | eived: 10/12/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | M |
| Color Before: | 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-66-6 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide | 0.03 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color After: | | | ty Before: ty After: | | Artifacts: |
| Comments: | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| o Name: AQUATE | c | | Contract: 91 | L082 | K40220W |
|--|--|--|----------------|------------|--|
| _ | | | SAS No.: | | SDG No.: 39963_ |
| Matrix (soil/wate | er): FISH_ | _ | | Lab Sampl | le ID: 200494 |
| Level (low/med): | LOW | _ | | Date Rece | eived: 10/12/93 |
| % Solids: | 100.0 |) | | | |
| Conce | entration | Units (ug, | L or mg/kg dry | y weight): | : MG/KG |
| c | AS No. | Analyte | Concentration | C Q | м |
| 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. 7. | 440-38-2 440-39-3 440-41-7 440-43-9 440-47-3 440-47-3 440-50-8 439-89-6 439-92-1 439-95-4 439-96-5 439-97-6 440-02-0 | Aluminum_ Antimony_ Arsenic_ Barium_ Beryllium Cadmium_ Calcium_ Chromium_ Cobalt_ Copper_ Iron_ Lead_ Magnesium Manganese Mercury_ Nickel Potassium | 0.02 | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| 77 | 782-49-2 440-22-4 440-23-5 | Selenium Silver Sodium Thallium Vanadium Zinc Cyanide | | | NR NR NR NR NR NR NR |
| Color Before: _ | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| א Name: AQUA' | TEC | | Contract: 91 | L082_ | | K40221W |
|----------------|-----------|------------------|-----------------|---------------|--------------|----------------|
| | | | | | | SDG No.: 39963 |
| atrix (soil/wa | _ | | | | | ⊇ ID: 200495 |
| • | • | | • | | _ | |
| evel (low/med) |): | _ | | Date | Rece | ived: 10/12/93 |
| Solids: | 100.0 | D | | | | |
| | | | /L or mg/kg dry | y wei | ght): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q I | |
| | 7429-90-5 | Aluminum | | - | ₁ | NR |
| | 7440-36-0 | Antimony_ | | - - | | NR |
| | 7440-38-2 | Arsenic _ | | | 1 | NR |
| | | Barium | | | | NR |
| | | Beryllium | | _ <u>_</u> | | MR |
| | 7440-43-9 | | | _ _ | | NR I |
| | | Calcium Chromium | | - | | NR NR |
| | 7440-47-3 | | | - - | | NR |
| | | Copper | | - | | NR |
| | | Iron | | - | | NR |
| | | Lead | | − −− | | NR |
| | | Magnesium | | - - | | NR |
| | 7439-96-5 | Manganese | | | | NR |
| | 7439-97-6 | Mercury | 0.03 | _ _ | | cv |
| | | Nickel | | _ _ | | NR |
| | 7440-09-7 | | | _ _ | | NR |
| | 7782-49-2 | | | _ | | NR |
| | | Silver | | - - | | NR |
| | 7440-23-5 | Thallium | | - | | NR NR |
| | | Vanadium_ | | - | | NR NR |
| | | Zinc | | - | | NR |
| | | Cyanide | | 1-1- | | NR |
| | | | | _ _ | | |
| olor Before: | | Clari | ty Before: | <u></u> | 1 | Texture: |
| lor After: | | Clari | ty After: | | | Artifacts: |
| omments: | | | | | | |

1 INORGANIC ANALYSES DATA SHEET

| EPA S | AMPLE | NO. |
|-------|-------|-----|
|-------|-------|-----|

| Name: AQUA | TEC | Contract: 91082 | | | K40222W | |
|--------------|----------------|-----------------|-----------------|-----------|-------------|-----------------|
| b Code: AQUA | .I_ Ca | se No.: BI | O SAS No.: | : _ | | SDG No.: 39963 |
| trix (soil/w | rater): FISH | _ | | La | b Samp | le ID: 200496 |
| vel (low/med | l): LOW_ | <u> </u> | | Da | te Rec | eived: 10/12/93 |
| Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight) | : MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - | | NR |
| | | Antimony | | - | | NR |
| | 7440-38-2 | Arsenic | | - | | NR |
| | 7440-39-3 | Barium | | | | NR |
| | 7440-41-7 | Beryllium | | | | NR |
| | | Cadmium | | | | NR |
| | • | Calcium_ | l | - | | NR |
| | | Chromium_ | | 1-1 | | NR |
| | | Cobalt | | - | | NR NR |
| | | Copper | | - | | NR NR |
| | | Iron | | | | NR NR |
| | | Magnesium | | <u> -</u> | | NR NR |
| | 7439-95-4 | Manganese | | 1-1 | | NR |
| | 7439-90-5 | Mercury | 0.04 | 1-1 | | cv |
| | | Nickel | | - | | NR |
| | | Potassium | | 1-1 | | NR |
| | | Selenium | | - | | NR |
| | | Silver | | - | | NR |
| | | Sodium | | - | | NR |
| | | Thallium | | - | | NR |
| | 7440-62-2 | Vanadium | | 1-1 | | NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | | Cyanide | | - | | NR |
| | | 1 | | | | |
| lor Before: | | Clari | ty Before: | | _ | Texture: |
| lor After: | | Clari | ty After: | | _ | Artifacts: |
| | · - | | | | | |

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Name: AQUATEC | | Contract: 91082 | K40223W |
|----------------------|----------------|-----------------|-----------------|
| Lab Code: AQUAI_ | Case No.: BIO_ | SAS No.: | SDG No.: 39963_ |
| Matrix (soil/water): | FISH_ | .Lab Sampl | e ID: 200497 |
| Level (low/med): | LOW | Date Rece | eived: 10/12/93 |

% Solids: 100.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

| . ———— | | | _ | | |
|-----------|--|---------------|------------|-------|----|
| CAS No. | Analyte | Concentration | С | Q | M |
| 7429-90-5 | Aluminum | | - | | NR |
| 7440-36-0 | Antimony | | - | | NR |
| 7440-38-2 | Arsenic | | - | | NR |
| 7440-39-3 | Barium | | - | | NR |
| 7440-41-7 | Beryllium | | - | | NR |
| 7440-43-9 | Cadmium | | - | | NR |
| 7440-70-2 | Calcium | | - | | NR |
| 7440-47-3 | Chromium | | | | NR |
| 7440-47-3 | Cobalt | | _ | | NR |
| | | | _ | | NR |
| 7440-50-8 | Copper | | _ | | |
| 7439-89-6 | Iron | | | | NR |
| 7439-92-1 | Lead | | _ | | NR |
| 7439-95-4 | Magnesium | | _ | | NR |
| 7439-96-5 | Manganese | | _ | | NR |
| 7439-97-6 | Mercury | 0.03 | | l | CV |
| 7440-02-0 | Nickel | | _ | l | NR |
| 7440-09-7 | Potassium | | l | | NR |
| 7782-49-2 | Selenium_ | | _ | | NR |
| 7440-22-4 | Silver | | | | NR |
| 7440-23-5 | Sodium | | - | | NR |
| 7440-28-0 | Thallium | | 1 | | NR |
| 7440-62-2 | Vanadium - | | - | | NR |
| 7440-66-6 | Zinc | | 1 | | NR |
| | Cyanide | | - | | NR |
| | | | - | 1 | |
| · | · ———————————————————————————————————— | · | • — | · ——— | |

| Color Before: | Clarity | Before: | Texture: | |
|---------------|-------------|---------|----------------|--------------|
| Color After: | Clarity | After: | Artifacts: | |
| Comments: | | | | |
| | | | | |
| | | | | - |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| o Name: AQUA | TEC | | Contract: 91 | L082 | | K40224W |
|----------------|------------------------|----------------------|-----------------|--------------|--------------|-----------------|
| _ | - | | | | | SDG No.: 39963_ |
| Matrix (soil/w | ater): FISH | _ | | Lab | Sample | E ID: 200498 |
| Level (low/med |): LOW_ | _ | | Date | Recei | ived: 10/12/93 |
| % Solids: | 100. | 0 | | | | |
| Cor | ncentration | Units (ug | /L or mg/kg dry | y wei | ght): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q I | <u>-</u> |
| | 7429-90-5 | Aluminum | | - | ₁ | NR I |
| | 7440-36-0 | Antimony_ | | | 1 | NR |
| | 7440-38-2 | Arsenic | | | | NR |
| | , | Barium | | - | | NR NR |
| | | Beryllium Cadmium | | - — | | NR |
| | 7440-70-2 | Calcium | | - - | | NR |
| | 7440-47-3 | Chromium | | - - | | NR |
| | | Cobalt | | - - | | NR |
| | 7440-50-8 | Copper | | - | | NR |
| | | Iron | | | | NR |
| | | Lead | | | | NR |
| | | Magnesium | | l_l_ | | NR |
| | | Manganese | | l_ _ | | NR |
| | 7439-97-6 7440-02-0 | Mercury | 0.03 | - | | CV NR |
| | 1 | Potassium | | - | | NR NR |
| | | Selenium | | - - | | NR |
| | | Silver _ | | - - | | NR |
| | ſ | Sodium | | <u> </u> | | NR |
| | 7440-28-0 | Thallium | . | - - | | NR |
| | 7440-62-2 | Vanadium_ | | | | NR |
| | 7440-66-6 | Zinc | | | | NR |
| | | Cyanide | | <u> </u> | | NR |
| Color Before: | | Clari | ty Before: | | | Texture: |
| Color After: | | Clari | ty After: | | | Artifacts: |
| Comments: | | | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | | | | K40225W |
|-----------------|------------------------|------------------------|----------------|------------|-----------------|
| .b Name: AQUA | TEC | | Contract: 91 | 1082 | |
| Lab Code: AQUA | I_ Ca: | se No.: BIO | SAS No.: | | SDG No.: 39963_ |
| Matrix (soil/wa | ater): FISH | _ | | Lab Sampl | e ID: 200499 |
| Level (low/med |): LOW_ | _ | | Date Rece | eived: 10/12/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | | NR |
| | 7440-36-0 | Antimony - | | - | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 7440-43-9 | | | - | NR NR |
| | 7440-70-2 | | | - | NR |
| | 7440-47-3 | Chromium | | - | NR |
| | 7440-48-4 | | | - | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | | | | NR |
| | 7439-92-1 | | | | NR |
| ·- | 7439-95-4 7439-96-5 | Magnesium | | | NR NR |
| | 7439-97-6 | Manganese Mercury | 0.04 | - | CV |
| | | Nickel | | - | NR |
| | 7440-09-7 | | | | NR |
| | 7782-49-2 | 1 | · | - | NR |
| | 7440-22-4 | Silver | | | NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium_ | | | NR |
| | 7440-62-2 7440-66-6 | | | - | NR |
| | /440-66-6 | ZincCyanide | |] _ | NR NR |
| | | -Jan.14e | | | |
| Color Before: | | Clarit | ty Before: | | Texture: |
| Color After: | | Clarit | ty After: | | Artifacts: |
| Comments: | | | | | |
| · | | | | | |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| ه Name: AQ | UATEC | | Contract: 91 | 1082 | 2 | K40226W |
|---------------------------------------|---------------|-----------|-----------------|------|-------------|-----------------|
| | | | | | | SDG No.: 39963 |
| | /water): FISH | | | | | le ID: 200500 |
| · | | - | | | | |
| Level (low/m | ed): LOW_ | - | | Dat | te Rec | eived: 10/12/93 |
| k Solids: | 100. | 0 | | | | |
| | Concentration | Units (ug | /L or mg/kg dry | 7 W6 | eight) | : MG/KG |
| | 1 | 1 | | | | |
| | CAS No. | Analyte | Concentration | С | Q | М |
| | 7429-90-5 | Aluminum | · | - - | | NR |
| | 7440-36-0 | Antimony_ | | - - | | NR |
| | 7440-38-2 | Arsenic | | - - | | NR |
| | 7440-39-3 | Barium | | -1- | | NR |
| | 7440-41-7 | Beryllium | | - - | | NR |
| | 7440-43-9 | Cadmium | | - - | | NR |
| | 7440-70-2 | Calcium | | - - | | NR |
| | 7440-47-3 | Chromium | | - - | | NR |
| | 7440-48-4 | Cobalt | [| [-[- | | NR |
| | 7440-50-8 | Copper | | - - | | NR |
| | 7439-89-6 | Iron | | - - | | NR |
| | 7439-92-1 | Lead | | - - | | NR |
| | 7439-95-4 | Magnesium | [| - - | | NR |
| | 7439-96-5 | Manganese | | - - | · | NR |
| | 7439-97-6 | Mercury | 0.04 | - - | | CV |
| | 7440-02-0 | Nickel - | | - - | | NR |
| | | Potassium | | - - | | NR |
| | 7782-49-2 | Selenium | | - - | | NR |
| | 7440-22-4 | Silver | [| [-[- | | NR |
| | 7440-23-5 | Sodium | | - - | | NR |
| | 7440-28-0 | Thallium | | - - | | NR |
| | 7440-62-2 | Vanadium | | - · | | NR |
| | 7440-66-6 | Zinc | | - - | | NR |
| | 7110 00 0 | Cyanide | | - : | | NR |
| | | cyanitae | | - : | | - |
| Color Before | : | Clari | ty Before: | | | Texture: |
| Color After: | | Clari | ty After: | | | Artifacts: |
| Comments: | | | - | | | |
| · · · · · · · · · · · · · · · · · · · | | | | | | |
| | | | | | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO |
|-----|--------|----|
|-----|--------|----|

| _b Name: AQUA | TEC | | Contract: 91 | 1082 | K40227W |
|---------------------------------------|-------------|--|-----------------|-------------|-----------------|
| Lab Code: AQUA | I_ Ca | se No.: BI | D SAS No.: | : | SDG No.: 39963_ |
| Matrix (soil/w | ater): FISH | _ | | Lab Sampl | e ID: 200501 |
| Level (low/med |): LOW_ | | | Date Rece | ived: 10/12/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | m |
| | 7429-90-5 | Aluminum | | _ - | NR NR |
| | 7429-90-5 | Antimony | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | Beryllium | | | NR |
| | 7440-43-9 | Cadmium | | | NR |
| | 7440-70-2 | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | 7440-48-4 | Cobalt | | | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | | NR |
| | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.05 | | cv |
| • | 7440-02-0 | Nickel | | | NR |
| | 7440-09-7 | Potassium | | | NR |
| | 7782-49-2 | Selenium_ | | | NR |
| | 7440-22-4 | Silver | | | NR NB |
| | 7440-23-5 | Thallium | | | NR NR |
| | 7440-28-0 | Vanadium | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | 1,410 00 0 | Cyanide | | | NR |
| | | | | - | |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |
| · · · · · · · · · · · · · · · · · · · | | | | | |
| | | ·· · · · · · · · · · · · · · · · · · · | | | |

FORM I - IN

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

| Sample ID | Description | Sex | % Lìpids |
|-----------|----------------|--------|----------|
| K40217 | Spotted Sucker | male | 0.88 |
| K40218 | Spotted Sucker | male | 1.08 |
| K40219 | Spotted Sucker | male | 1.11 |
| K40220 | Spotted Sucker | male | 1.07 |
| K40221 | Spotted Sucker | male | 0.99 |
| K40222 | Spotted Sucker | male | 0.83 |
| K40223 | Spotted Sucker | male | 1.66 |
| K40224 | Spotted Sucker | male | 0.54 |
| K40225 | Spotted Sucker | male | 1.16 |
| K40226 | Spotted Sucker | female | 0.81 |
| K40227 | Spotted Sucker | male | 0.85 |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# 39976

PCB, PESTICIDE AND MERCURY ANALYSES

BIOTA - FISH

Analyses performed by:

Aquatec, Inc. Colchester, Vermont

Review performed by:

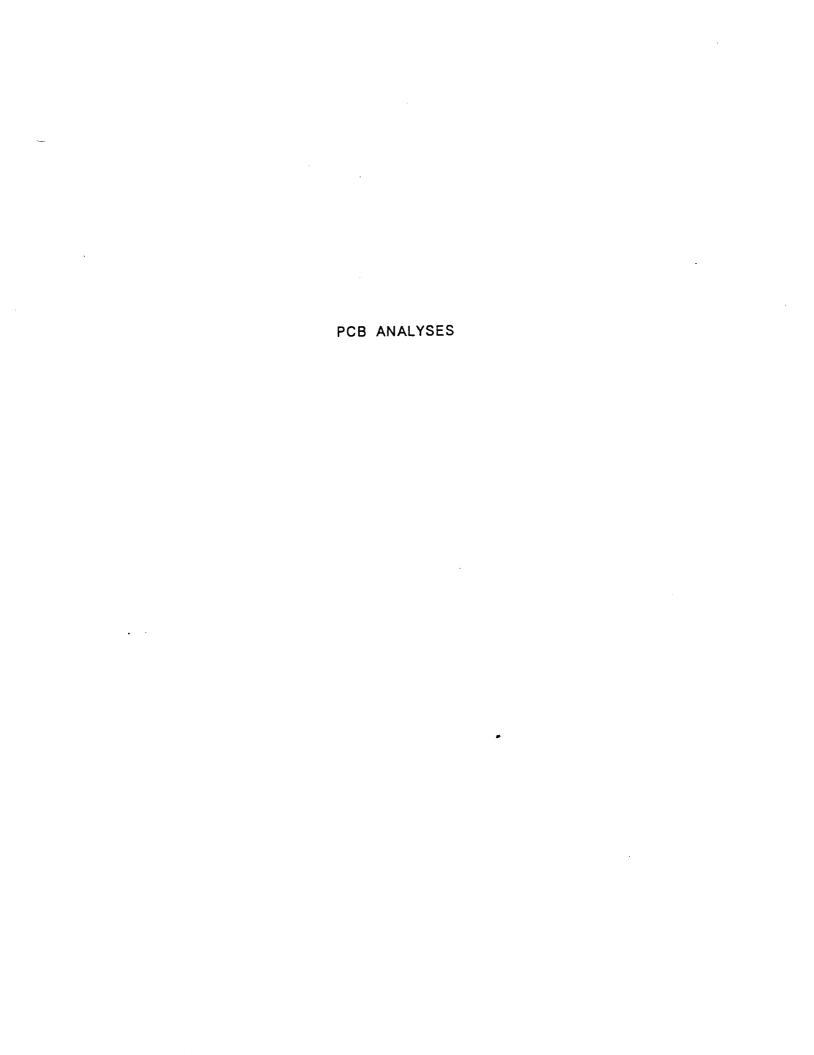
Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the Pesticide/PCB/PBB and Mercury data packages for SDG# 39976 for the Biota sampling of the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and corrected sample results. Analyses were performed on the following samples:

| | | | | | Analysis | | |
|-----------|--------|--------------|-------------|-----------------|----------|--------|--|
| Sample ID | Lab ID | Species | Description | Semple Location | PCB | %Lipid | |
| K40211W | 200200 | White Sucker | whole body | Near Saugatuck | x | x | |
| K40212W | 200201 | White Sucker | whole body | Near Saugatuck | x | x | |
| K40228W | 200512 | White Sucker | whole body | Battle Creek | x | x | |
| K40229W | 200513 | White Sucker | whole body | Battle Creek | x | × | |
| K40230W | 200514 | White Sucker | whole body | Battle Creek | x | × | |
| K40231W | 200515 | White Sucker | whole body | Battle Creek | × | × | |
| K40232W | 200516 | White Sucker | whole body | Battle Creek | x | × | |
| K40233W* | 200517 | White Sucker | whole body | Battle Creek | x | × | |
| K40234W | 200518 | White Sucker | whole body | Battle Creek | x | × | |
| K40235W | 200519 | White Sucker | whole body | Battle Creek | x | × | |
| K40236W | 200520 | White Sucker | whole body | Battle Creek | x | × | |
| K40237W | 200521 | White Sucker | whole body | Battle Creek | х | × | |
| K40238W | 200522 | White Sucker | whole body | Battle Creek | x | × | |
| K40328W | 201576 | White Sucker | whole body | Trowbridge | х | × | |
| K40329W | 201577 | White Sucker | whole body | Trowbridge | х | x | |
| K40330W | 201578 | White Sucker | whole body | Trowbridge | × | × | |
| K40331W | 201579 | White Sucker | whole body | Trowbridge | х | × | |
| K40332W | 201580 | White Sucker | whole body | Trowbridge | × | × | |

^{*} MS/MSD/DUP performed on sample



Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by Aquatec, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for nonlinearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

The specified holding time for PCB analyses from extraction is 40 days. All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No Aroclors were detected in the method or instrument blanks.

3. System Performance

The system performance was acceptable for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The %RSD was within acceptable limits for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limits.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in sample K40228W. All data for this sample have been qualified as estimated due to the deviation. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

A review of the sample chromatograms indicate that the Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

All matrix spike and matrix spike duplicate recoveries and the relative percent difference (RPD) between recoveries were within acceptable control limits. All matrix spike blank recoveries were also within acceptable control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA |
|--|-----|----------|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | <u> </u> | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | x | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| 0 out of2 | | | |
| Blanks | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | X | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------|-------------|-------------|
| Is the chromatographic performance acceptable for each instrument? | x | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | X | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Instrument Blanks | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | x | | |
| Have all samples been injected within a 12 hour period beginning with the injection of an instrument blank? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | × | | |
| Are %D values for all compounds within limits (less than 15%)? | × | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| | | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|---|------|---------|-------------|
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | X | | |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | <u></u> | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | x | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Lin | nits | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding | Surrogales | - Column 1 | Surrogates | Column 2 | |
|------------|------------|------------|------------|------------|----------|--|
| | Time | TCX | DCB | тсх | DCB | |
| K40211W | OK for all | | | | | |
| K40212W | samples | | | | | |
| K40228W | | ↓ (41) | ↓ (48) | ↓ (42) | Į (49) | |
| K40229W | | | | | | |
| K40230W | | | | | | |
| K40231W | | | | | | |
| K40232W | | | | | | |
| K40233W | | | | | | |
| K40233WMS | | | | | | |
| K40233WMSD | | | | | | |
| K40234W | | | | | | |
| K40235W | | | | | ! | |
| K40236W | | | | | | |
| K40237W | | | | | | |
| K40238W | | <u></u> | | | | |
| K40328W | | | | | | |
| K40329W | | | | | | |
| K40330W | | · | | | | |
| K40331W | | | | | | |
| K40332W | | | | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogates diluted out D

Recovery low t

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP2618</u> Column: RTX-35 / RTX-5

| Date: | 5/10/94 1845 | 5/14 | 5/14 | 5/14 | 5/14 | 5/14 | 5/14 |
|----------------------|--------------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | to 5/11/94 1334 | 0123 | 0156 | 0835 | 0908 | 1547 | 1620 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | %D | % D | %D | % D |
| Arocior 1016 | 4.6 / 4.6 | | | | | | 8.0 |
| Aroclor 1221 | 3.9 / 3.9 | - | | | | | |
| Aroclor 1232 | 3.2 / 3.7 | | | | | | |
| Arocior 1242 | 2.7 / 2.8 | | | | | | |
| Aroclor 1248 | 3.2 / 2.7 | 3.0 | | 4.0 | | 3.5 | <u> </u> |
| Aroclor 1254 | 2.8 / 2.8 | | 1.0 | | | | |
| Aroclor 1260 | 3.5 / 2.7 | | | | 0.5 | | |
| Tetrachloro-m-xylene | 4.9 / 3.6 | | | | | | |
| Decachlorobiphenyl | 8.6 / 9.2 | | | | | | |
| Affected Samples: | | | | | | | ļ |
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PCB Calibration Summary - Page 2

Instrument: <u>HP2618</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | | 5/14 | 5/15 | 5/16 | 5/16 | 5/16 | 5/16 |
|----------------------|--------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | | 2153 | 2226 | 0930 | 1003 | 1430 | 1503 |
| , | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cai. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | %D | % D | % D | % D | %D |
| Aroclor 1016 | | | | | | | |
| Aroclor 1221 | | | | | | | |
| Aroclor 1232 | | | | | | i | |
| Aroclor 1242 | | | 7.0 | | | | |
| Aroclor 1248 | | 4.5 | | 4.5 | | 2.0 | |
| Aroclor 1254 | | | | | 4.0 | | |
| Aroclor 1260 | | | | | | | 1.5 |
| Tetrachioro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | • |
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|---|-----------|----------|---------|-------|
| | CORRECTED | ANALYSIS | SUMMARY | FORMS |
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FORM 1 AROCLOR ANALYSIS DATA SHEET

EPA SAMPLE NO.

Lab Sample ID: 200200 Phase Type: **BIOTA** Phase Weight: __ 10.0 Date Received: 10/09/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: 1.0 Date Analyzed: 05/14/94

Lab Name: Aquatec, Inc.

91082

Contract:

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | | |
|------------|--------------|-----------------------|---|--|
| 12674-11-2 | Aroclor-1016 | 0.050 | U | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U | |
| 11141-16-5 | Aroclor-1232 | 0.050 | U | |
| 53469-21-9 | Aroclor-1242 | 0.050 | U | |
| 12672-29-6 | Aroclor-1248 | 0.77 | | |
| 11097-69-1 | Aroclor-1254 | 0.46 | | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U | |
| | | | | |

EPA SAMPLE NO. K40212W Lab Code: _ AQUAI Lab Name: Aquatec, Inc. 39976 91082 Case: BIO SDG: Contract: _ Lab Sample ID: 200201 Phase Type: **BIOTA** Phase Weight: _ 10.0 (g) Date Received: 10/09/93 Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: _ (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | 0 |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Arocior-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.36 | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.74 | |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

Lab Code:

Case:

AQUAI

BIO

Date Analyzed:

EPA SAMPLE NO. K40228W 39976 SDG:

Phase Type: ____ Lab Sample ID: 200512 **BIOTA** Phase Weight: 10.0 (g) Date Received: 10/12/93 Injection Volume: ___ 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: _____

Lab Name: Aquatec, Inc.

Contract:

91082

1.0

Sulfur Clean-up: N (Y/N)

05/14/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | U 55 |
| 11104-28-2 | Aroclor-1221 | 0.050 | UJ |
| 11141-16-5 | Aroclor-1232 | 0.050 | UJ |
| 53469-21-9 | Aroclor-1242 | 0.050 | して |
| 12672-29-6 | Aroclor-1248 | 0.050 | UJ |
| 11097-69-1 | Aroclor-1254 | 0.050 | 77 |
| 11096-82-5 | Aroclor-1260 | 0.050 | てい |

K40229W

EPA SAMPLE NO.

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Contract: 91082 Case: BIO SDG: 39976

Phase Type: BIOTA Lab Sample ID: 200513 10.0 Date Received: 10/12/93 Phase Weight: _ (g) Injection Volume: Date Extracted: 04/14/94 1.0 (uL) Dilution Factor: __ Date Analyzed: 05/14/94 1.0

Sulfur Clean-up: N (Y/N)

| COMPOUND | CONCENTRATION (mg/Kg) | Q |
|--------------|---|---|
| Aroclor-1016 | 0.050 | U |
| Aroclor-1221 | 0.050 | U |
| Aroclor-1232 | 0.050 | U |
| Aroclor-1242 | 0.050 | U |
| Aroclor-1248 | 0.050 | U |
| Aroclor-1254 | 0.056 | |
| Arocior-1260 | 0.034 | J |
| | Aroclor-1016 Aroclor-1221 Aroclor-1232 Aroclor-1242 Aroclor-1248 Aroclor-1254 | Aroclor-1016 0.050 Aroclor-1221 0.050 Aroclor-1232 0.050 Aroclor-1242 0.050 Aroclor-1248 0.050 Aroclor-1254 0.056 |

EPA SAMPLE NO. K40230W AQUAI Lab Name: Aquatec, Inc. Lab Code: 39976 91082 Case: BIO SDG: Contract: Phase Type: **BIOTA** Lab Sample ID: 200514 Phase Weight: 10.0 (g) Date Received: 10/12/93 Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| | | | |
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.096 | |
| 11096-82-5 | Aroclor-1260 | 0.031 | J |

EPA SAMPLE NO. K40231W Lab Code: **IAUDA** Lab Name: Aquatec, Inc. 91082 Case: BIO SDG: 39976 Contract: ___ Phase Type: ___ BIOTA Lab Sample ID: 200515 Phase Weight: _ 10.0 Date Received: 10/12/93 (g) Injection Volume: 04/14/94 1.0 (uL) Date Extracted: Dilution Factor: 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.050 | |
| 11096-82-5 | Aroclor-1260 | 0.030 | J |
| | | | |

EPA SAMPLE NO. K40232W Lab Code: AQUAL Lab Name: Aquatec, Inc. SDG: _ BIO 39976 Contract: 91082 Case: 200516 Phase Type: ___ **BIOTA** Lab Sample ID: 10.0 Date Received: 10/12/93 Phase Weight: (g) Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: ____ 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Arocior-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Arocior-1254 | 0.11 | |
| 11096-82-5 | Aroclor-1260 | 0.033 | J |

EPA SAMPLE NO. K40233W Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 SDG: 39976 Contract: Case: **BIOTA** Lab Sample ID: 200517 Phase Type: 10.0 Phase Weight: Date Received: 10/12/93 **(g)** Injection Volume: 1.0 Date Extracted: 04/14/94 (uL) 1.0 05/14/94 Dilution Factor: Date Analyzed: Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Arocior-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.043 | J |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

K40234W

05/14/94

EPA SAMPLE NO.

Lab Name: Aquatec, Inc. Lab Code: AQUAI

Dilution Factor:

1.0

Contract: 91082 Case: BIO SDG: 39976

 Phase Type:
 BIOTA
 Lab Sample ID:
 200518

 Phase Weight:
 10.0
 (g)
 Date Received:
 10/12/93

 Injection Volume:
 1.0
 (uL)
 Date Extracted:
 04/14/94

Sulfur Clean-up: N (Y/N)

Date Analyzed:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.036 | J |
| 11096-82-5 | Aroclor-1260 | 0.021 | J |

EPA SAMPLE NO. K40235W Lab Code: Lab Name: Aquatec, Inc. AQUAI 91082 Case: BIO SDG: 39976 Contract: **BIOTA** Lab Sample ID: Phase Type: 200519 10.0 Phase Weight: (g) Date Received: 10/12/93 (uL) Date Extracted: Injection Volume: 1.0 04/14/94 Dilution Factor: 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: (Y/N) Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.050 | υ |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.028 | J |
| 11096-82-5 | Aroclor-1260 | 0.050 | U |

EPA SAMPLE NO. K40236W Lab Name: Aquatec, Inc. Lab Code: **AQUAI** 91082 Case: _ BIO SDG: _ 39976 Contract: __ Lab Sample ID: 200520 Phase Type: BIOTA Date Received: Phase Weight: 10.0 10/12/93 (g) 1.0 Date Extracted: 04/14/94 Injection Volume: ___ (uL) Dilution Factor: 1.0 Date Analyzed: 05/14/94 Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Arocior-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.045 | J |
| 11096-82-5 | Aroclor-1260 | 0.022 | J |

EPA SAMPLE NO. K40237W Lab Code: Lab Name: Aquatec, Inc. AQUAI 39976 Contract: __ 91082 Case: BIO SDG: Lab Sample ID: 200521 Phase Type: **BIOTA** Phase Weight: 10.0 Date Received: 10/12/93 (g) 1.0 Injection Volume: ___ Date Extracted: 04/14/94 (uL) Dilution Factor: 1.0 Date Analyzed: 05/16/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Ω |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | U |
| 11104-28-2 | Aroclor-1221 | 0.050 | U |
| 11141-16-5 | Aroclor-1232 | 0.050 | U |
| 53469-21-9 | Aroclor-1242 | 0.050 | U |
| 12672-29-6 | Aroclor-1248 | 0.050 | U |
| 11097-69-1 | Aroclor-1254 | 0.053 | |
| 11096-82-5 | Aroclor-1260 | 0.024 | J |

Sulfur Clean-up: _

(Y/N)

Ν

EPA SAMPLE NO.

K40238W

Date Analyzed:

 Lab Name:
 Aquatec, Inc.
 Lab Code:
 AQUAI

 Contract:
 91082
 Case:
 BIO
 SDG:
 39976

 Phase Type:
 BIOTA
 Lab Sample ID:
 200522

 Phase Weight:
 10.0
 (g)
 Date Received:
 10/12/93

 Injection Volume:
 1.0
 (uL)
 Date Extracted:
 04/14/94

1.0

Dilution Factor: ___

Sulfur Clean-up: N (Y/N)

05/14/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.050 | Į |
| 11104-28-2 | Aroclor-1221 | 0.050 | Į |
| 11141-16-5 | Aroclor-1232 | 0.050 | |
| 53469-21-9 | Aroclor-1242 | 0.050 | ī |
| 12672-29-6 | Aroclor-1248 | 0.050 | Į |
| 11097-69-1 | Arocior-1254 | 0.048 | |
| 11096-82-5 | Aroclor-1260 | 0.027 | |

EPA SAMPLE NO.

K40328W

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

SDG: 39976

Phase Type: BIOTA
Phase Weight: 10.0 (g)
Injection Volume: 1.0 (uL)
Dilution Factor: 1.0

 Lab Sample ID:
 201576

 Date Received:
 10/15/93

 Date Extracted:
 04/14/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | TON Q | |
|------------|--------------|-----------------------|-------|--|
| 12674-11-2 | Aroclor-1016 | 0.050 | U | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U | |
| 11141-16-5 | Aroclor-1232 | 0.050 | U | |
| 53469-21-9 | Arocior-1242 | 0.050 | U | |
| 12672-29-6 | Aroclor-1248 | 0.050 | U | |
| 11097-69-1 | Aroclor-1254 | 0.48 | | |
| 11096-82-5 | Aroclor-1260 | 0.067 | | |

EPA SAMPLE NO.

K40329W

Lab Name: Aquatec, Inc. Lal

Lab Code: AQUAI

N4032344

Contract: 91082

Case: BIO

SDG: 39976

Phase Type: BIOTA
Phase Weight: 10.0 (g)
Injection Volume: 1.0 (uL)
Dilution Factor: 1.0

Lab Sample ID: 201577

Date Received: 10/15/93

Date Extracted: 04/14/94

Date Analyzed: 05/14/94

Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ı o | |
|------------|--------------|-----------------------|--------|--|
| 12674-11-2 | Aroclor-1016 | 0.050 | U | |
| 11104-28-2 | Aroclor-1221 | 0.050 | U | |
| 11141-16-5 | Arocior-1232 | 0.050 | U | |
| 53469-21-9 | Aroclor-1242 | 0.050 | U | |
| 12672-29-6 | Aroclor-1248 | 0.12 | | |
| 11097-69-1 | Aroclor-1254 | 0.091 | | |
| 11096-82-5 | Aroclor-1260 | 0.030 | J | |

EPA SAMPLE NO. K40330W Lab Code: AQUAI Lab Name: Aquatec, Inc. SDG: 39976 Case: _ BIO Contract: 91082 Phase Type: ____ Lab Sample ID: 201578 **BIOTA** Phase Weight: 10.0 Date Received: 10/15/93 **(g)** Injection Volume: ___ 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: 2.0 Date Analyzed: 05/16/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 0.10 | ι |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | l |
| 53469-21-9 | Aroclor-1242 | 0.10 | ι |
| 12672-29-6 | Arocior-1248 | 0.10 | ι |
| 11097-69-1 | Aroclor-1254 | 0.92 | |
| 11096-82-5 | Aroclor-1260 | 0.094 | J |

EPA SAMPLE NO. K40331W Lab Code: **AQUAI** Lab Name: Aquatec, Inc. SDG: 39976 91082 BIO Case: __ Contract: ____ **BIOTA** Lab Sample ID: 201579 Phase Type: ___ Date Received: Phase Weight: 10.0 10/15/93 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 Dilution Factor: Date Analyzed: 2.0 05/16/94 Sulfur Clean-up: N (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | _ 0 |
|------------|--------------|-----------------------|-----|
| 12674-11-2 | Aroclor-1016 | 0.10 | u |
| 11104-28-2 | Aroclor-1221 | 0.10 | Ų |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | U |
| 12672-29-6 | Aroclor-1248 | 0.10 | U |
| 11097-69-1 | Aroclor-1254 | 0.84 | |
| 11096-82-5 | Aroclor-1260 | 0.12 | |

EPA SAMPLE NO. K40332W Lab Code: IAUDA Lab Name: Aquatec, inc. Contract: 39976 91082 Case: BIO SDG: 201580 Phase Type: **BIOTA** Lab Sample ID: Phase Weight: _ Date Received: 10/15/93 10.0 (g) Injection Volume: 1.0 (uL) Date Extracted: 04/14/94 05/16/94 Dilution Factor: __ 2.0 Date Analyzed: Sulfur Clean-up: Ν (Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>a</u> |
|------------|--------------|-----------------------|----------|
| 12674-11-2 | Aroclor-1016 | 0.10 | υ |
| 11104-28-2 | Aroclor-1221 | 0.10 | U |
| 11141-16-5 | Aroclor-1232 | 0.10 | U |
| 53469-21-9 | Aroclor-1242 | 0.10 | U |
| 12672-29-6 | Aroclor-1248 | 0.10 | U |
| 11097-69-1 | Aroclor-1254 | 0.72 | |
| 11096-82-5 | Aroclor-1260 | 0.14 | |

PESTICIDE ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 Method 8081.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- C Identification confirmed by GC/MS.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The holding time for pesticide extracts is 40 days from extraction to analysis. No deviations from this holding time were noted.

2. Blank Contamination

Quality assurance blanks, i.e., method and instrument blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Method blanks measure laboratory contamination during preparation. Instrument blanks measure instrument contamination and sample cross-contamination.

No target compounds were detected in either the method blanks or instrument blanks.

3. System Performance

The resolution and compound breakdown was within acceptable limits for both columns.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

4.1 Initial Calibration

A maximum RSD of 20% is allowed. All initial calibrations were within the specified limit.

4.2 Continuing Calibration

A maximum RPD of 25% is allowed. All continuing calibrations were within the specified limit.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries were below acceptable control limits for both surrogates in sample K40228W. All data for this sample have been qualified as estimated due to the deviation. All other surrogate recoveries were within acceptable control limits.

6. Compound Identification

The retention times of pesticide/PCB compounds must fall within the calculated retention time windows for both the primary and confirmation columns.

The quantitated concentrations between the two columns exceeded the 25% difference limit for the following samples and compounds:

| K40211W | Aldrin gamma-Chlordane 4,4'-DDE | 68.2% 144.2% 29.8% |
|---------|---|------------------------------------|
| K40212W | Aldrin gamma-Chlordane | 107.4% 98.4% |
| K40328W | Aldrin Heptachlor Epoxide 4,4'-DDE | 61.5% 46.2% 40.6% |
| K40329W | Aldrin Heptachlor Epoxide gamma-Chlordane 4,4'-DDE | 63.0% 44.5% 50.8% 38.1% |
| K40330W | Aldrin Heptachlor Epoxide | 29.6% 58.3% |
| K40331W | Aldrin gamma-Chlordane 4,4'-DDE | 72.4% 60.8% 35.1% |
| K40332W | Aldrin Heptachlor Epoxide gamma-Chlordane 4,4'-DDE | 59.9% 2793.9% 99.4% 47.1% |

All data in the samples for the compounds listed has been qualified. Data with %D values between 25 and 50% has been qualified as estimated, J. All data with %D values between 50 and 90% has been qualified as estimated with presumptive evidence of presence, JN. All data with %D values greater than 90% has been rejected.

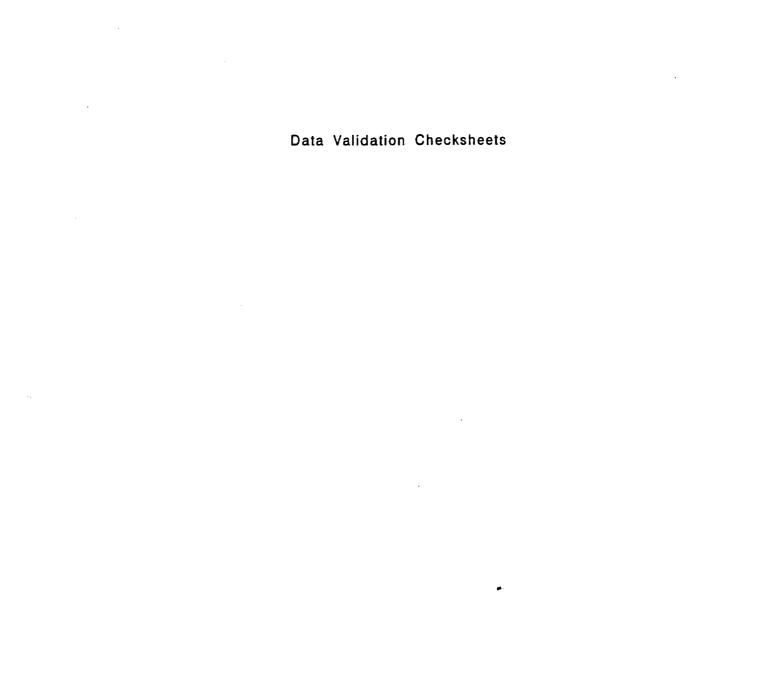
7. Matrix Spike/Matrix Spike Duplicate

Matrix spike and matrix spike duplicate data are used to assess the precision and accuracy of the analytical method.

Recoveries for Aldrin were above the acceptable control limit in the matrix spike and matrix spike duplicate samples. All other recoveries and the relative percent difference (RPD) between recoveries were within acceptable control limits. Matrix spike recoveries were with acceptable control limits for the matrix spike blank (MSB) sample. No qualifiers have been were added to the samples based on matrix spike performance.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



Pesticide Data Validation Checklist

| | YES | NO | NA |
|--|----------|----------|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | <u> </u> | | |
| Are the samples numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | <u> </u> | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u> </u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are the surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | x | | |
| Are the outliers correctly marked with an asterisk? | X | | |
| Were recoveries of TCMX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Were the method blanks reanalyzed? | | | X |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| out of8 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| Is the method blank summary form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Has an instrument blank been analyzed at the beginning of each 12 hour period following the initial calibration? | x | | |

Pesticide/PCB Data Validation Checklist - Page 2

| | YES | NO | NA |
|--|------------|-------------|-------------|
| Is the chromatographic performance acceptable for each instrument? | <u>X</u> | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any trip/field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | x | |
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts presblanks, and MS/MSD? | sent for a | ll samples, | |
| peak resolution check | X | | |
| performance evaluation mixtures (BCS) | X | | |
| Toxaphene multipoint calibration | X | | |
| Pesticide/PBB multipoint calibration | X | | |
| Pesticide/PBB mid-point standard | X | | |
| instrument blanks | X | | |
| Are Forms VI 1-4 present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses if INDA and INDB within limits for both columns? | X | | |
| Is the resolution between any two adjacent peaks in the resolution check mixture > 60% for both columns? | X | | |
| Is Form VII-1 present for each BCS analyzed for both columns? | X | | |
| Has the individual % breakdown exceeded 20% on either column for 4,4'-DDT | | X | |
| Are all the relative percent difference (RPD) values for all PEM analytes < 25%? | X | | |
| Is Form VII-2 present and complete for each mid-point standard analyzed? | <u> </u> | | |
| Are RPD values for all compounds < 25%? | X | | |
| Analytical Sequence Check | | | |

Pesticide/PCB Data Validation Checklist - Page 3

| | YES | NO | NA |
|---|----------|-------------|-------------|
| Is Form VIII present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| Is Form IX-1 present for each lot of Florisil cartridges used? | x | | |
| Are all samples listed on the form? | <u> </u> | | |
| If GPC cleanup was performed, is Form IX-2 present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits for: | | | |
| Florisil cartridge check (80-120%) | X | | |
| GPC calibration (80-110%) | | | X |
| Pesticide/PBB Identification | | | |
| Is a Form X present for every sample in which a pesticide or PCB was detected? | x | | |
| Was GC/MS confirmation provided when required? | | | X |
| Is the percent difference (%D) calculated for the positive sample results on the two columns less than 25%? | | X | |
| Were there any false negatives? | | X | |
| Compound Quantitation and Reported Detection Limi | ts | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Where field duplicates submitted with the samples? | | X | |
| | | | |

Pesticide/PBB Qualifier Summary Holding Time and Surrogates

| Sample ID | Holding | Surrogates | - Column 1 | Surrogates | - Column 2 |
|------------|------------|------------|------------|------------|------------|
| | Time | тсх | DCB | тсх | DCB |
| K40211W | OK for all | | | | |
| K40212W | samples | | | | |
| K40228W | | ↓ (51) | ↓ (51) | ↓ (49) | ↓ (50) |
| K40229W | | | | | |
| K40230W | | | | | |
| K40231W | | | | | |
| K40232W | | | | | |
| K40233W | | | | | |
| K40233WMS | | | | | |
| K40233WMSD | | | | | |
| K40234W | | | | | |
| K40235W | | | | | |
| K40236W | | | | | |
| K40237W | | | | | |
| K40238W | | _ | | | |
| K40328W | | | | | |
| K40329W | | | | | |
| K40330W | | | | | |
| K40331W | | | | | |
| K40332W | | | | | |

TCX Tetrachloro-m-xylene DCR Decachlorobiphenyl

Surrogate diluted out Recovery high D

†

Recovery low

Unless otherwise noted, all samples are within specified limits.

Pesticide/PBB Calibration Summary

Instrument: <u>HP2404</u> Column: <u>RTX-5</u>

| Date: | 5/17/94 | 5/22 | 5/22 | 5/23 | 5/23 | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time; | 17:19 | 10:29 | 20:52 | 05:11 | 09:57 | | |
| | initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | %D | % D | % D | % D | %D | %D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | | |
| 3-Bromobiphenyl | | | | | | | <u> </u> |
| 4-Bromobiphenyl | | | | | | | <u> </u> |
| Hexachlorobenzene | | <u> </u> | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptacior epoxide | | | | | | | |
| gamma-Chlordane | | | | | | <u></u> | |
| alpha-Chiordane | | | | | | | <u> </u> |
| trans-Nonachior | | | | | | | |
| 4,4'-DDE | | | | | | | <u> </u> |
| Dieldrin | | | | | <u> </u> | | |
| 4,4'-DDD | · | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | | | <u> </u> | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | | | | |
| Decachlorobiphenyl | | | | | | | |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

Pesticide/PBB Calibration Summary - Page 2

Instrument: <u>HP2404</u> Column: <u>RTX-35</u>

| Date: | 5/17/94 | 5/22 | 5/22 | 5/23 | 5/23 | | |
|-----------------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Time: | 17:19 | 10:29 | 20:52 | 05:11 | 16:22 | | |
| • | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. |
| | %RSD | % D | % D | %D | % D | % D | %D |
| 2-Bromobiphenyl | ok | ok | ok | ok | ok | | |
| 3-Bromobiphenyl | | | | | | | |
| 4-Bromobiphenyl | | | | | | | |
| Hexachlorobenzene | | | | | | | |
| gamma-BHC (Lindane) | | | | | | | |
| Aldrin | | | | | | | |
| Heptaclor epoxide | | | | | | | |
| gamma-Chlordane | | | | | | | |
| alpha-Chiordane | | | | | | | <u> </u> |
| trans-Nonachior | | | | | | | |
| 4,4'-DDE | | <u>-</u> | | | | | |
| Dieldrin | | | | | | | |
| 4,4'-DDD | | | | | | | |
| cis-Nonachlor | | | | | | | |
| 4,4'-DDT | | | ļ | | | | |
| Hexabromobiphenyl (BP-6) | | | | | | | |
| Toxaphene | | | | | | | |
| Tetrachloro-m-xylene | | | | <u> </u> | | | |
| Decachlorobiphenyl | | | | | | | <u> </u> |
| Affected Samples: | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |

| · | Corrected Sample Analys | is Data Sheets | • |
|---|-------------------------|----------------|---|
| | | | |
| | | | |
| | | a . | |
| | | | |
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Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 Contract: Case: BIO

K40211W

Client ID No.

39976 SDG:

Phase Type: **Biota** Phase Weight: 10.0 Extraction: Soxhlet Dilution Factor: 1.0

Lab Sample ID: 200200 Date Received: 10/09/93 Date Extracted: 04/14/94 05/22/94 Date Analyzed: Sulfur Clean-up: Ν

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|----|---|
| 2052-07-5 | 2-Bromobiphenyl | Ø.010 | U | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | υ | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.026 | TN | |
| 1024-57-3 | Heptachlor Epoxide | 0.031 | | |
| 5103 74 2 | -gamma Chlordane | 0.0077 | | R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | υ | |
| 72-55-9 | 4,4'-DDE | 0.031 | J | |
| 60-57-1 | Dieldrin | 0.010 | U | } |
| 72-54-8 | 4,4'-DDD | 0,010 | U |] |
| 5103-73-1 | cis-Nonachlor | 0.0050 | Ü | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | 1 |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | 1 |
| 8001-35-2 | Toxaphene | 0.20 | U |] |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

K40212W

Client ID No.

SDG: 39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200201

 Date Received:
 10/09/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/22/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α | |
|------------|--------------------|-----------------------|-----|----|
| 2052-07-5 | 2-Bromobiphenyl | ; 0.010 | U ~ | |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| 58-89-9 | gamma-BHC | 0.0050 | U | |
| 309-00-2 | Aldrin | 0.015 | | -R |
| 1024-57-3 | Heptachlor Epoxide | 0.019 | | |
| 5103 74 2 | gamma Chlordane | 0.0063 | | -R |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| 72-55-9 | 4,4'-DDE | 0.029 | | |
| 60-57-1 | Dieldrin | 0.010 | U | |
| 72-54-8 | 4,4'-DDD | 0.010 | U | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U | |
| 50-29-3 | 4,4'-DDT | 0.010 | U | |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| 8001-35-2 | Toxaphene | 0.20 | U | |

10.0

Soxhlet

1.0

Phase Weight:

Dilution Factor:

Extraction:

K40228W Lab Name: Aquatec, Inc. Lab Code: AQUAI 91082 Contract: SDG: 39976 Case: BIO Lab Sample ID: 200512 10/12/93 Phase Type: Biota Date Received:

Date Extracted:

Date Analyzed:

Sulfur Clean-up:

Client ID No.

04/14/94

05/22/94

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ |
|------------|--------------------|-----------------------|----------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | UJ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | 40 |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U/J |
| 118-74-1 | Hexachlorobenzene | 0.0050 | UJ |
| 58-89-9 | gamma-BHC | 0.0050 | リブ |
| 309-00-2 | Aldrin | 0.0050 | UJ |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | UJ |
| 5103-74-2 | gamma-Chlordane | 0.0050 | UJ |
| 5103-71-9 | alpha-Chlordane | 0.0050 | r) () |
| 39765-80-5 | trans-Nonachlor | 0.0050 | UJ |
| 72-55-9 | 4,4'-DDE | 0.010 | リブ |
| 60-57-1 | Dieldrin | 0.010 | UJ |
| 72-54-8 | 4,4'-DDD | 0.910 | UT |
| 5103-73-1 | cis-Nonachlor | 0.0050 | UJ |
| 50-29-3 | 4,4'-DDT | 0.010 | UJ |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | υĴ |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

K40229W

39976

Client ID No.

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200513

 Date Received:
 10/12/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/22/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | Ú . |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.015 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | Ü |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40230W

39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200514

 Date Received:
 10/12/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/22/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | α |
|------------|--------------------|-----------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U . |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | Ü |
| 72-55-9 | 4,4'-DDE | 0.036 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.910 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | Ü |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

K40231W

39976

Client ID No.

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200515

 Date Received:
 10/12/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/22/94

 Sulfur Clean-up:
 N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ. |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ū |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.010 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40232W

39976

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 200516

Date Received: 10/12/93

Date Extracted: 04/14/94

Date Analyzed: 05/22/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U_ |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.041 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.018 | |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40233W

SDG: 39976

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 200517

Date Received: 10/12/93

Date Extracted: 04/14/94

Date Analyzed: 05/22/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.014 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No.
K40234W

39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200518

Date Received: 10/12/93

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | a |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | . U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ù |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | Ü |
| 5103-71-9 | alpha-Chlordane | 0.0050 | Ŭ |
| 39765-80-5 | trans-Nonachlor | 0.0050 | Ü |
| 72-55-9 | 4,4'-DDE | 0.010 | Ū |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | Ū |
| 5103-73-1 | cis-Nonachlor | 0.0050 | Ū |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | Ū |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

K40235W

Client ID No.

SDG: 39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200519
Date Received: 10/12/93
Date Extracted: 04/14/94
Date Analyzed: 05/23/94
Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | Ü |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | Ú |
| 72-55-9 | 4,4'-DDE | 0.010 | U |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

K40236W

Client ID No.

SDG: 39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200520

 Date Received:
 10/12/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/23/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q . |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.010 | U |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40237W

SDG: 39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

 Lab Sample ID:
 200521

 Date Received:
 10/12/93

 Date Extracted:
 04/14/94

 Date Analyzed:
 05/23/94

 Sulfur Clean-up:
 N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q . |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | υ |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | Ü |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.011 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.910 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40238W

SDG: 39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 200522

Date Received: 10/12/93

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|--------------------------|---|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0050 | U |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | U |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.012 | |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.

Lab Code: AQUAI

Contract: 91082

Case: BIO

Client ID No. K40328W

39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 201576

Date Received: 10/15/94

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

SDG:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | ۵ |
|------------|--------------------|--------------------------|-----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U 5 |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0091 | 77 |
| 1024-57-3 | Heptachlor Epoxide | 0.0052 | 17 |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.017 | Ć(|
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

1.0

Dilution Factor:

Client ID No. Aquatec, Inc. K40329W Lab Name: AQUAI Lab Code: Contract: 91082 39976 BIO SDG: Case: Lab Sample ID: 201577 Biota 10/15/94 Phase Type: Date Received: Phase Weight: 10.0 Date Extracted: 04/14/94 05/23/94 Extraction: Soxhlet Date Analyzed:

Sulfur Clean-up:

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | <u>α</u> |
|------------|--------------------|-----------------------|------------|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U . |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U, |
| 309-00-2 | Aldrin | 0.014 | N |
| 1024-57-3 | Heptachlor Epoxide | 0.0090 | J |
| 5103-74-2 | gamma-Chlordane | 0.0066 | ブ ル |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.029 | 7 |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | Ü |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

K40330W

Client ID No.

SDG: 39976

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 201578

Date Received: 10/15/94

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION (mg/Kg) | Q |
|------------|--------------------|-----------------------|----|
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | U |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.0065 | 7 |
| 1024-57-3 | Heptachlor Epoxide | 0.0050 | JN |
| 5103-74-2 | gamma-Chlordane | 0.0050 | U |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.010 | U |
| 60-57-1 | Dieldrin | 0.010 | U |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No.
K40331W

SDG: 39976

Phase Type: Biota
Phase Weight: 10.0 g
Extraction: Soxhlet
Dilution Factor: 1.0

Lab Sample ID: 201579

Date Received: 10/15/94

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

| CAS NO. | COMPOUND | CONCENTRATION | a |
|------------|--------------------|---------------|----|
| | 1 | (mg/Kg) | |
| | | | |
| 2052-07-5 | 2-Bromobiphenyl | 0.010 | U |
| 2113-57-7 | 3-Bromobiphenyl | 0.010 | U |
| 92-66-0 | 4-Bromobiphenyl | 0.010 | Ū |
| 118-74-1 | Hexachlorobenzene | 0.0050 | U |
| 58-89-9 | gamma-BHC | 0.0050 | U |
| 309-00-2 | Aldrin | 0.011 | 77 |
| 1024-57-3 | Heptachlor Epoxide | 0.011 | , |
| 5103-74-2 | gamma-Chlordane | 0.0061 | JN |
| 5103-71-9 | alpha-Chlordane | 0.0050 | U |
| 39765-80-5 | trans-Nonachlor | 0.0050 | U |
| 72-55-9 | 4,4'-DDE | 0.028 | 7 |
| 60-57-1 | Dieldrin | 0.010 | Ū |
| 72-54-8 | 4,4'-DDD | 0.010 | U |
| 5103-73-1 | cis-Nonachlor | 0.0050 | U |
| 50-29-3 | 4,4'-DDT | 0.010 | U |
| 36355-01-8 | Hexabromobiphenyl | 0.020 | U |
| 8001-35-2 | Toxaphene | 0.20 | U |

Lab Name: Aquatec, Inc.
Lab Code: AQUAI
Contract: 91082
Case: BIO

Client ID No. K40332W

39976

Phase Type: Biota

Phase Weight: 10.0 g

Extraction: Soxhlet

Dilution Factor: 1.0

Lab Sample ID: 201580

Date Received: 10/15/94

Date Extracted: 04/14/94

Date Analyzed: 05/23/94

Sulfur Clean-up: N

SDG:

| ı | CAS NO. | COMPOUND | CONCENTRATION | a | |
|-----|------------|--------------------|---------------|------|-------|
| ı | | | (mg/Kg) | | |
| ١ | | | | | |
| | 2052-07-5 | 2-Bromobiphenyl | 0.010 | · U | |
| | 2113-57-7 | 3-Bromobiphenyl | 0.010 | U | |
| | 92-66-0 | 4-Bromobiphenyl | 0.010 | U | |
| I | 118-74-1 | Hexachlorobenzene | 0.0050 | U | |
| - [| 58-89-9 | gamma-BHC | 0.0050 | υ | |
| | 309-00-2 | Aldrin | 0.012 | JN . | ^ |
| ł | 1024 57 3 | Heptachlor Epoxide | 0.0080 | | -K |
| - | 5103-74-2 | gamma-Chlordane | 0.0051 | | -R |
| | 5103-71-9 | alpha-Chlordane | 0.0050 | U | |
| | 39765-80-5 | trans-Nonachlor | 0.0050 | U | |
| | 72-55-9 | 4,4'-DDE | 0.022 | J | |
| | 60-57-1 | Dieldrin | 0.010 | U | ì |
| | 72-54-8 | 4,4'-DDD | 0.010 | U | ı |
| | 5103-73-1 | cis-Nonachlor | 0.0050 | U | ŀ |
| | 50-29-3 | 4,4'-DDT | 0.010 | U | : |
| | 36355-01-8 | Hexabromobiphenyl | 0.020 | U | |
| | 8001-35-2 | Toxaphene | 0.20 | U | |

MERCURY ANALYSES

Introduction

Analyses were performed according to USEPA CLP SOW ILM03.0.

The data validation process is intended to evaluate the data on a technical basis rather than a contract compliance basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission for validation. During the validation process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this valuation, qualifier codes may be added, deleted, or modified by the data validator. Validator qualified results are annotated with the following codes in accordance with National Functional Guidelines:

Concentration (C) qualifiers:

- U The analyte was analyzed for but not detected. The associated value is the instrument detection limit.
- B The reported value was obtained from a reading less than the contract required detection limit (CRDL) but greater than or equal to the instrument detection limit (IDL).

Quantitation (Q) qualifiers:

- E The reported value is estimated due to the presence of interference.
- M Duplicate injection precision not met.
- N Spiked sample recovery not within control limits.
- S Reported value was determined by the method of standard additions (MSA).
- W Post-digestion spike for Furnace-AA analysis is out of control limits, while sample absorbance is less than 50% of spike absorbance.
- Duplicate analysis not within control limits.
- Correlation coefficient for MSA is less than 0.995.

Validation qualifiers:

- J The analyte was positively identified; however, the associated numerical value is an estimated concentration only.
- UJ The analyte was not detected above the reported sample detection limit. However, the reported limit is approximate and may or may not represent the actual limit of detection.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC test, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

The recommended holding times for mercury analyses is 28 days from tissue homogenization. All samples were analyzed within this holding time.

2. Blank Contamination

Quality assurance blanks, i.e., preparation and calibration blanks, are prepared to identify any contamination which may have been introduced into the samples during sample preparation or analysis. Preparation blanks measure laboratory contamination during preparation. Calibration blanks measure instrument contamination and sample cross-contamination.

All calibration and preparation blanks were found to be acceptable, with no analytes detected above the CRQL.

3. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of giving acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument is giving satisfactory daily performance.

3.1 Initial Calibration

The correlation coefficient of the initial calibration was greater than the minimum required 0.995.

3.2 Continuing Calibration

All continuing calibration verification standards were acceptable.

3.3 CRDL Standard

All CRDL standard recoveries were within acceptable limits.

4. Matrix Spike/Laboratory Duplicate

Matrix spike and laboratory duplicate data are used to assess the precision and accuracy of the analytical method.

4.1 Matrix spike

Recovery for the matrix spike was within acceptable limits.

4.2 Laboratory Duplicate

The difference between laboratory duplicates was within acceptable limits.

5. Laboratory Control Sample (LCS)

All recoveries were within the acceptable recovery limits.

6. Serial Dilution

No ICP analyses were performed, therefore no serial dilution was necessary.

7. Furnace QC

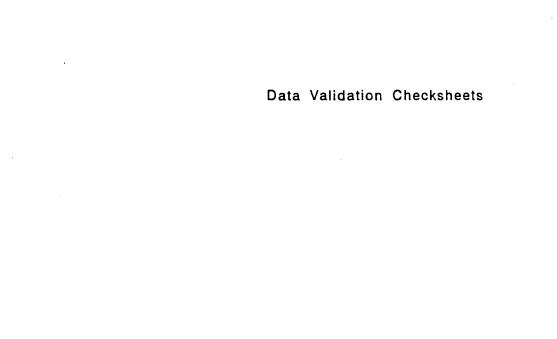
No furnace analyses were performed.

8. Method of Standard Additions (MSA)

No MSA were performed.

9. System Performance and Overall Assessment

Overall system performance was acceptable. Other than those deviation specifically mentioned in this review, the overall data quality is within the guidelines specified in the method.



| | YES | NO | NA |
|--|----------|--------------|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Form I to IX | | | |
| Are all the Form I through Form IX labeled with: | | | |
| Laboratory name? | <u> </u> | | |
| Sample No.? | X | | |
| SDG No.? | X | | |
| Correct units? | X | | |
| Matrix? | X | | |
| Raw Data | | | |
| Is the digestion log for flame AA/ICP present? | | | X |
| Is the digestion log for furnace AA present? | | | X |
| Is the distillation log for mercury present? | X | | |
| ls the distillation log for cyanides present? | | | X |
| Are preparation dates present on sample preparation logs/bench sheets? | X | | |
| Are the measurement read out records present for: | | | |
| ICP | | | X |
| Flame AA | | | X |
| Furnace AA | | | X |
| Mercury | X | | |
| Cyanides | | | × |
| Is the data legible? | X | | |
| is the data properly labeled? | X | | |
| Holding Times | | | |
| Were mercury analyses performed within 28 days? | <u> </u> | | |

| | YES | NO | NA |
|---|----------|---------------|--------------|
| Were cyanide distillations performed within 14 days? | | | X |
| Were other metal analysis performed within 6 months? | | | X |
| Form I (Final Data) | | | |
| Are all forms complete? | <u> </u> | | |
| Are correct units indicated on Form !'s? | X | | |
| Are all "less than IDL" values properly coded with "U"? | X | | |
| Are the correct concentration qualifiers used with final data? | X | | |
| Was a brief physical description of samples given on Form I's? | | X | |
| Calibration | | | |
| is a record of at least 2 point calibration present for ICP analysis? | | | × |
| Is a record of 5 point calibration present for Hg analysis? | X | | |
| ls a record of 4 point calibration present for: | | | |
| Flame AA? | | | X |
| Furnace AA? | | | X |
| Cyanides? | | | X |
| Is one calibration standard at the CRDL level for all AA (except Hg) and cyanides analyses? | | | × |
| Is correlation coefficient less than .995 for: | | | |
| Mercury Analysis? | X | - | |
| Cyanide Analysis? | | | X |
| Atomic Absorption Analysis? | | | X |
| Form II A (Initial and Continuing Calibration Verifica | ation) | | |
| Present and complete for every metal and cyanide? | X | | |
| Are all calibration standards (initial and continuing) within control limits for: | | | |
| Metals (90-110 %R)? | | | X |
| Hg (80-120 %R)? | X | | |
| Cyanides (85-115 %R)? | | | X |

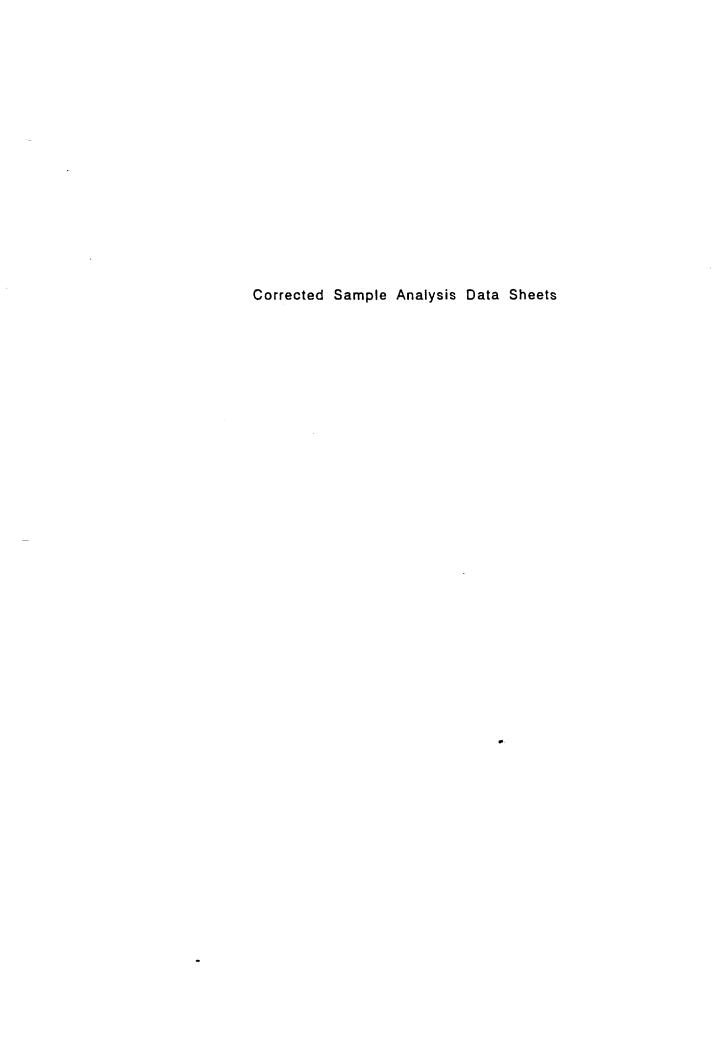
| | YES | NO | NA |
|--|-----|-------------|---------------------------------------|
| Was continuing calibration performed every 10 samples or every 2 hours? | X | | |
| Was the ICV for cyanides distilled? | | | X |
| Form II B (CRDL Standards for AA and ICP) | - | | |
| Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)? | | | X |
| Was a mid-range calibration verification standard distilled and analyzed for cyanide analysis? | | | X |
| Was a 2xCRDL (or 2xIDL when IDL>CRDL) analyzed (CRI) for each ICP run? | | | X |
| Was CRI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run? | | | X |
| Are CRA and CRI standards within control limits for metals (60-120 %R)? | X | | |
| Is mid-range standard within control limits for cyanide (80-120 %R) | | | X |
| Form III (Initial and Continuing Calibration Blanks) | | | · · · · · · · · · · · · · · · · · · · |
| Present and complete? | X | | |
| Was an initial calibration blank analyzed? | X | | |
| Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)? | X | | |
| Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)? | X | | |
| Are all calibration blanks less than two times Instrument Detection Limit (when IDL>CRDL)? | | | X |
| Form III (Preparation Blank) | | | |
| Was one prep. blank analyzed for: | | | |
| each Sample Delivery Group SDG)? | X | | |
| each batch of digested samples? | × | | |
| each matrix type? | × | | |
| Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? | | X | |

| | YES | NO | NA |
|--|-----------|--------------|-------------|
| If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? | | | X |
| Is concentration of prep. blank value less than two times IDL, when IDL is greater than CRDL? | | | X |
| Is concentration of prep. blank below the negative CRDL? | | X | |
| Form IV (ICP Interference Check Sample) | | | |
| Present and complete? | | | X |
| Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? | | | × |
| Are all Interference Check Sample results inside the control limits (±20%)? | | | X |
| If no, is concentration of AI, Ca, Fe, or Mg lower than the respective concentration in ICS? | | | X |
| Form V A (Spiked Sample Recovery - Pre-Digestion/F | re-Distil | lation) | |
| Present and complete for: | | | |
| each SDG? | X | | |
| each matrix type? | X | | |
| Was field blank used for spiked sample? | | X | |
| Are all recoveries within control limits (75-125)? | X | | |
| If no, is sample concentration greater than or equal to four times spike concentration? | | | X |
| Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA? | | | X |
| Are any spike recoveries: | | | |
| less than 10%? | | X | |
| between 10-74%? | | X | |
| between 126-200%? | | X | |
| greater than 200%? | | X | |
| Form VI (Lab Duplicates) | | | |
| Present and complete for: | | | |
| each SDG? | X | | |
| | | | |

| | YES | NO | NA_ |
|---|-----|-------------|--|
| each matrix type? | X | | |
| Was field blank used for duplicate analysis? | | X | |
| Are all values within control limits (RPD 20% or difference $\leq \pm CRDL$)? | × | | |
| If no, are all results outside the control limits flagged with an * on Form I's and VI? | | | X |
| Is any RPD (where sample and duplicate are both greater than or equal to 5 times CRDL) > 100%? | | | X |
| Is any difference between sample and duplicate (where sample and/or duplicate is less than 5xCRDL) > 2xCRDL? | | X | |
| Form VII (Laboratory Control Sample) | | | |
| Was one LCS prepared and analyzed for: | | | |
| each SDG? | X | | ************************************** |
| each batch samples digested/distilled? | X | | |
| Is LLCS "Found" value higher than the control limits on Form VII? | | X | |
| Is LCS "Found" lower than the control limits on Form VII? | | X | |
| Form IX (ICP Serial Dilution) | | | |
| Was Serial Dilution analysis performed for: | | | |
| each SDG? | | | X |
| each matrix type? | | | X |
| Was field blank(s) used for Serial Dilution Analysis? | | | X |
| Are results outside control limit flagged with an "E"" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. | | | X |
| Are any % difference values: | | | |
| > 10%? | | | X |
| ≥100%? | | | X |
| Furnace Atomic Absorption (AA) QC Analysis | | | |
| Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed be GFAA? | | | X |

| | YES | NO | NA |
|--|------|----|----|
| Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or coefficient of Variation (CV) for concentration greater than CRDL? | | | X |
| Was a dilution analyzed for sample with analytical spike recovery less than 40%? | | | X |
| Is analytical spike recovery outside the control limits (85-115%) for any sample? | | | X |
| Form VIII (Method of Standard Addition Results) | | | |
| Present? | | X | |
| If no, is any Form I result coded with "S" or a "+"? | | X | |
| Is coefficient of correlation for MSA less than 0.990 for any sample? | | | X |
| Was MSA required for any sample but not performed? | | X | |
| Is coefficient of correlation for MSA less than 0.995? | | | X |
| Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run? | | | X |
| Was proper quantitation procedure followed as outlined in the SOW on page E-23? | | | X |
| <u>Field Blank</u> | | | |
| Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples? | | | X |
| If no, was field blank value already rejected due to other QC criteria? | | | X |
| Form X, XI, XII (Verification of Instrumental Paramet | ers) | | |
| Is verification report present for : | | | |
| Instrument Detection Limits (quarterly)? | X | | |
| ICP Interelement Correlation Factors (annually)? | | | X |
| ICP Linear Ranges (quarterly)? | | | X |
| Form X (Instrument Detection Limits) | | | |
| Are IDLs present for: | | | |
| all the analytes? | X | | |
| all the instruments used? | X | | |

| | YES | NO | NA |
|---|-----|----|----|
| is IDL greater than CRDL for any analyte? | | X | |
| If yes, is the concentration of Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL. | | | X |
| Was any sample result higher linear range of ICP. | | | × |
| Was any sample result higher than the highest calibration standard for non-ICP parameters? | | X | |
| If yes for any of the above, was the sample diluted to obtain the result on Form I? | | | × |
| | | | |



INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | | Contract: 91 | .002 | | 1 |
|----------------|------------------------|----------------|----------------|------|--------|-----------------|
| | Cas | se No.: BIO | | | | SDG No.: 39976 |
| atrix (soil/wa | _ | | | | | le ID: 200200 |
| evel (low/med) | • TOW | _ | | Date | e Pece | eived: 10/09/93 |
| J. | | _ | | Date | e Nece | 10/09/93 |
| Solids: | 100.0 |) | | | | |
| Con | centration | Units (ug, | L or mg/kg dry | we: | ight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q | м |
| | 7429-90-5 | Aluminum | | - - | | NR |
| | 7440-36-0 | Antimony_ | | - - | | NR |
| | 7440-38-2 | Arsenic | | _ - | | NR |
| 1 | 7440-39-3 | | | | | NR |
| | 7440-41-7 | | | _ _ | | NR |
| | 7440-43-9 7440-70-2 | CadmiumCalcium | | - - | | NR NR |
| | 7440-70-2 | Chromium_ | | - - | | NR NR |
| | 7440-48-4 | | | - - | | NR |
| | 7440-50-8 | Copper | | - - | | NR |
| | 7439-89-6 | Iron | | - - | | NR |
| | 7439-92-1 | Lead | | - - | | NR |
| | 7439-95-4 | Magnesium | | - - | | NR |
| | 7439-96-5 | Manganese | | - - | | NR |
| | 7439-97-6 | | .0.03 | | | cv |
| | 7440-02-0 | | | | | NR |
| | 7440-09-7 | | | _ _ | | NR |
| | 7782-49-2 | | | _ _ | | NR |
| | 7440-22-4 | | | _ _ | | NR |
| | 7440-23-5 7440-28-0 | | | l—I— | | NR NR |
| | 7440-28-0 | | | 1-1- | | NR NR |
| | 7440-66-6 | Zinc | | - - | | NR |
| | | Cyanide | | - - | | NR |
| | | | | - - | | |
| Color Before: | | Clari | ty Before: | | | Texture: |
| Color After: | | Clari | ty After: | | | Artifacts: |
| Comments: | | | | | | |
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INORGANIC ANALYSES DATA SHEET EPA SAMPLE NO.

| Lab Name: AQUA | TEC | | Contract: 91 | 1082 | 2 | K40212W |
|----------------|------------------------|----------------------|---------------------------------------|--------------|-------------|-------------------|
| | | | | | | SDG No.: 39976_ |
| Matrix (soil/w | _ | | | | | - e ID: 200201 |
| • | • | _ | | | _ | |
| Level (low/med |): LOW_ | _ | | Dat | te Rece | ived: 10/09/93 |
| % Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y we | eight): | MG/KG |
| | CAS No. | Analyte | Concentration | С | Q I | M |
| | | | | _ - | , | <u></u> |
| | 7429-90-5 | | | _ - | | NR |
| | 7440-36-0 7440-38-2 | Antimony_ Arsenic | | - - | | NR NR |
| | 7440-38-2 | Barium | | - - | | NR NR |
| | 7440-41-7 | | <u> </u> | - - | | NR |
| | 7440-43-9 | | | - - | | NR |
| | 7440-70-2 | | [[| - - | | NR |
| | 7440-47-3 | | | - - | | NR |
| | 7440-48-4 | | | - - | | NR |
| | • | Copper | · · · · · · · · · · · · · · · · · · · | [-[- | [: | NR |
| | 7439-89-6 | Iron | | - - | | NR |
| | 7439-92-1 | | | - - | | NR |
| | 7439-95-4 | Magnesium | | - - | | NR |
| | 7439-96-5 | | | 1-1. | | NR |
| | | Mercury | 0.03 | - - | | CV |
| | | Nickel | | - - | | NR |
| | 7440-09-7 | Potassium | | - - | | NR |
| | 7782-49-2 | Selenium | | 1-1- | | NR |
| | 7440-22-4 | Silver - | | - - | | NR |
| | 7440-23-5 | Sodium | | - | | NR |
| | 7440-28-0 | Thallium_ | | | | NR |
| | 7440-62-2 | Vanadium_ | | | | NR |
| | 7440-66-6 | Zinc | | _ . | | NR |
| | | Cyanide | | - - | | NR |
| | l | | 1 | I 1 . | 1 | I |
| Color Before: | | Clari | ty Before: | | | Texture: |
| Color After: | | Clari | ty After: | | | Artifacts: |
| Comments: | | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Lab Name: AQUA | TEC | | Contract: 91 | .082 | K40228W |
|----------------|-------------|-------------|-----------------|-------------|--|
| | | | | | SDG No.: 39976 |
| Matrix (soil/w | _ | | | | e ID: 200512 |
| datily (SOII/W | acer). Fish | _ | | nan sambi | .e 1D. 200512 |
| Level (low/med |): LOW | | | Date Rece | ived: 10/12/93 |
| % Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | weight): | MG/KG |
| | | | | | |
| | CAS No. | Analyte | Concentration | C Q | M |
| | 7429-90-5 | Aluminum | | - | NR |
| | | Antimony | | | NR |
| | 7440-38-2 | Arsenic | | - | NR |
| | 7440-39-3 | Barium - | | | NR |
| | 7440-41-7 | Beryllium | | - | NR |
| | 7440-43-9 | Cadmium | | | NR |
| | 7440-70-2 | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | 7440-48-4 | | | - | NR |
| | 7440-50-8 | Copper | | _ | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | | NR |
| | 7439-95-4 | Magnesium | | - | NR |
| | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury | 0.03 | _ | CV |
| | 7440-02-0 | Nickel | | _ | NR |
| | 7440-09-7 | Potassium | | | NR |
| | 7782-49-2 | Selenium | | - | NR |
| | 7440-22-4 | Silver - | | | NR |
| | 7440-23-5 | Sodium | | | NR |
| | 7440-28-0 | Thallium | | | NR |
| | 7440-62-2 | Vanadium | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | | NR |
| | | | | | ll |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | • | INORGANIC A | ANALYSES DATA S | SHEET | | |
|----------------|------------------------|-------------------|-----------------|-------------|---------------------------------------|-----------------|
| Lab Name: AQUA | TEC | | Contract: 91 | 1082 | | K40229W |
| | | | | | | SDG No.: 39976_ |
| | _ | | | | | _ |
| Matrix (soil/w | ater): FISH | - | • | Lab Sa | mple | ID: 200513 |
| Level (low/med |): LOW_ | - | | Date R | ecei | ved: 10/12/93 |
| % Solids: | 100. | 0 | | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weigh | it): 1 | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | М | |
| | 7429-90-5 | Aluminum | | - | — <u>N</u> | R |
| | 7440-36-0 | Antimony_ | | | N | |
| | 7440-38-2 | Arsenic | | | N | |
| | 7440-39-3 | | | _ | N | |
| | 7440-41-7 | Beryllium | | - | N | |
| | 7440-70-2 | Calcium | | - | N | |
| | 7440-47-3 | 1 - · · — | | - | N | |
| | 7440-48-4 | | | - | N | |
| | 7440-50-8 | Copper | (| - | N | |
| | 7439-89-6 | Iron | | - | N | |
| | 7439-92-1 | Lead | | | N | |
| | 7439-95-4 | | | _ | N | |
| | 7439-96-5 | | | - | N | |
| | 7439-97-6 7440-02-0 | Mercury Nickel | 0.03 | - | _ c | |
| | 7440-02-0 | Potassium | | - | $ _{N}^{N}$ | |
| | 7782-49-2 | Selenium | | - | N | |
| | 7440-22-4 | | | - | N | |
| | 7440-23-5 | · | | - | | R |
| | 7440-28-0 | | | | | R(|
| | 7440-62-2 | | | | | R |
| | 7440-66-6 | Zinc | | _ | | R |
| | | Cyanide_ | | - | N | R |
| | 1 | l | l <u></u> | l_l | l | 1 |
| Color Before: | | Clari | ty Before: | | T | exture: |
| Color After: | | Clari | ty After: | | A | rtifacts: |
| Comments: | | | | | · · · · · · · · · · · · · · · · · · · | |
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1 EPA SAMPLE NO. INORGANIC ANALYSES DATA SHEET

| Lab Name: 1 | AQUATEC | | | Contract: 91 | L08 | 2 | | K4023 | W |
|-------------|-------------------|-------|-----------|-----------------|-----|--------|----------|--------|-------|
| | | | | D SAS No.: | | | sD | G No.: | 39976 |
| Matrix (soi | | | | | | | | D: 200 | |
| • | • | _ | _ | | | _ | | | |
| Level (low, | <pre>/med):</pre> | rom_ | _ | | Da | te Rec | eive | d: 10/ | 12/93 |
| % Solids: | | 100.0 |) | | | | | | |
| | Concentr | ation | Units (ug | /L or mg/kg dry | , w | eight) | : MG | /KG | |
| | CAS N | · | Analyta | Concentration | | Q | м | | |
| | CAS N | | Migiyce | Concentration | | Q | 1 1 | | |
| | 7429- | 90-5 | Aluminum | | - | | NR | | |
| | 7440- | 36-0 | Antimony | | | | NR | | |
| | 7440- | | Arsenic | | | | NR | | |
| | 7440- | 39-3 | Barium | | _ | | NR | | |
| | 7440- | 41-7 | Beryllium | | 1_1 | | NR | | |
| | 7440- | | Cadmium_ | | 1-1 | | NR | | |
| | 7440- | ! | Calcium_ | | - | | NR NR | | |
| | 7440- | | | | | | - NR | | |
| | 7440- | | | | 1-1 | | NR | | |
| | 7439- | | Copper | | - | | NR | | |
| | 7439- | | Lead | | - | | NR | | |
| | 7439- | | Magnesium | | - | | NR | | |
| | 7439- | | Manganese | | - | | NR | | |
| | 7439- | | Mercury | 0.02 | 1-1 | | cv | | |
| | 7440- | | Nickel | | - | | NR | | |
| | 7440- | | Potassium | | 1-1 | | NR | | |
| | 7782- | | | | - | | NR | | |
| | 7440- | | Silver | | | | NR | | |
| | 7440- | | Sodium | | 1-1 | | NR | | |
| | 7440- | | Thallium_ | | 1_1 | | NR | | |
| | 7440- | | Vanadium_ | | 1-1 | | NR | | |
| | 7440- | 66-6 | Zinc | | - | | NR | | |
| | \ | | Cyanide | | - | | NR | | |
| Colom Doso | | | | | | | - | | |
| Color Befor | re: | | Clari | ty Before: | | - | Te | cture: | |
| Color After | r: | | Clari | ty After: | | - | Art | ifacts | : |
| Comments: | | | | | | | | | |
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EPA SAMPLE NO.

| | INORGANIC ANALYSES DATA SHEET | | | | DIA DAIL DE NO. | |
|---|--|---|---------------|-----------------|---|--|
| · · · · · · · · · · · · · · · · · · · | | | 1082 | K40231W | | |
| Lab Name: AQUA | IEC | | Contract: 91 | | | |
| Lab Code: AQUA | I_ Ca | se No.: BIO | SAS No.: | | SDG No.: 39976_ | |
| Matrix (soil/water): FISH_ Lab Sample | | | | | le ID: 200515 | |
| Level (low/med): LOW Date Reces | | | | eived: 10/12/93 | | |
| % Solids: | 100. | 0 | | | | |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG | | | | | | |
| | CAS No. | Analyte | Concentration | C Q | м | |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-47-3 7440-48-4 7440-50-8 7439-89-6 7439-92-1 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 | Aluminum Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury | | | NR NR NR NR NR NR NR NR NR NR NR NR NR N | |
| Color Before: | 7440-09-7 7782-49-2 7440-22-4 7440-23-5 7440-28-0 7440-62-2 7440-66-6 | Potassium Selenium Silver Sodium Thallium Vanadium Zinc Cyanide | ty Before: | | NR NR NR NR NR NR NR NR NR Texture: | |
| Color After: | | Clari | ty After: | | Artifacts: | |
| Comments: | | | | | | |

FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Lab Name: AQUATEC Contract: 91082 | | | | | K40232W | | |
|--|------------------------|---------------------|-----------------|-------------------------|-------------|----------------|--|
| | | | | | | SDG No.: 39976 | |
| Lab Code: AQUAI_ Case No.: BIO_ SAS No.: Matrix (soil/water): FISH_ I | | | | | | le ID: 200516 | |
| Level (low/med): LOW | | | | Date Received: 10/12/93 | | | |
| % Solids: | 100. | _ _ | | | | | |
| | | | | | _ | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y w | eight) | : MG/KG | |
| | CAS No. | Analyte | Concentration | С | Q | м | |
| | 7429-90-5 | Aluminum | | - - | | NR | |
| | 7440-36-0 | Antimony_ | | | | NR | |
| | 7440-38-2 | Arsenic | | _ . | | NR | |
| | 7440-39-3 7440-41-7 | Barium Beryllium | | - - | | NR NR | |
| | 7440-43-9 | Cadmium | | - - | | NR | |
| | 7440-70-2 | Calcium | | - - | | NR | |
| | 7440-47-3 | Chromium | | | | NR | |
| | 7440-48-4 | Cobalt | | [_[. | | NR | |
| | 7440-50-8 | Copper | | _ . | | NR | |
| | 7439-89-6 7439-92-1 | Iron | |]_]. | | NR NR | |
| | 7439-95-4 | Magnesium | | - - | | NR | |
| | 7439-96-5 | Manganese | | - - | | NR | |
| | 7439-97-6 | Mercury | 0.03 | - : | | cv | |
| | 7440-02-0 | Nickel | | | | NR | |
| | 7440-09-7 | Potassium | | [_]. | | NR | |
| | 7782-49-2 | Selenium_ | | _ . | | NR | |
| | 7440-22-4 7440-23-5 | Silver | | - - | | NR NR | |
| | 7440-23-3 | Thallium | | - - | | NR | |
| | 7440-62-2 | Vanadium | | - | | NR | |
| | 7440-66-6 | Zinc - | · | - | | NR | |
| | | Cyanide_ | | [-] | | NR | |
| | | | l | 1_1 | | . | |
| Color Before: | | Clari | ty Before: | | | Texture: | |
| Color After: | | Clari | ty After: | | | Artifacts: | |
| Comments: | | | | | | | |

INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
|-----|--------|-----|
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|----------------------------|------------------------|------------------------|---------------------------------------|----------------|-------------------------|--|
| Lab Name: AQUA | | Contract: 91 | L082 | K40233W | | |
| Lab Code: AQUA | AI Ca | se No.: BI | SAS No.: | 1 | _ SDG No.: 3997 | |
| Matrix (soil/water): FISH_ | | | Lab Sample ID: 200517 | | | |
| Level (low/med): LOW | | | | Date R | eceived: 10/12/93 | |
| | - | | | | 20021000 20,22,00 | |
| % Solids: | 100. | 0 | | | | |
| Co | oncentration | Units (ug | /L or mg/kg dry | y weigh | t): MG/KG | |
| | CAS No. | Analyte | Concentration | C Q | M | |
| | | | | | | |
| | 7429-90-5 7440-36-0 | Aluminum_ Antimony_ | | - | NR NR | |
| | 7440-38-2 | Arsenic | · · · · · · · · · · · · · · · · · · · | - | $- \frac{NR}{NR} $ | |
| | 7440-38-2 | | | - | - NR | |
| | 7440-41-7 | | | - | - NR | |
| | 7440-43-9 | · • · | | - | NR | |
| | 7440-70-2 | | | - | NR | |
| | 7440-47-3 | Chromium | | - | NR | |
| | 7440-48-4 | | | 121 | NR NR | |
| | 7440-50-8 | Copper | | l_ | NR NR | |
| | 7439-89-6 | Iron | | l | NR | |
| | | Lead | | - | NR NR | |
| | 7439-95-4 7439-96-5 | Manganesium | İ | - | NR | |
| | 7439-96-5 | Mercury | 0.05 | - | $- \frac{n\kappa}{cv} $ | |
| | 7440-02-0 | | 0.03 | - | $- _{NR} $ | |
| | 7440-09-7 | | | - | NR | |
| | 7782-49-2 | | | - | - NR | |
| | 7440-22-4 | | | - | NR | |
| | 7440-23-5 | Sodium | | - | NR | |
| | 7440-28-0 | Thallium | | - - | NR | |
| | 7440-62-2 | | | | NR | |
| | 7440-66-6 | Zinc | | | NR | |
| | | Cyanide | | | NR | |
| | 1 | l | l | _ | | |
| Color Before: | | Clari | ty Before: | | Texture: | |
| Color After: | | Clarity After: | | | Artifacts: | |
| Comments: | | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| INORGANIC ANALYSES DATA SHEET | | | | |
|--|--|--|--|--|
| Lab Name: AQUATEC Contract: 91082 K40234W | | | | |
| Lab Code: AQUAI_ Case No.: BIO_ SAS No.: SDG No.: 39976 | | | | |
| Matrix (soil/water): FISH_ Lab Sample ID: 200518 | | | | |
| Level (low/med): LOW Date Received: 10/12/93 | | | | |
| % Solids: 100.0 | | | | |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG | | | | |
| CAS No. Analyte Concentration C Q M | | | | |
| 7429-90-5 Aluminum NR 7440-36-0 Antimony NR 7440-38-2 Arsenic NR 7440-39-3 Barium NR 7440-41-7 Beryllium NR 7440-43-9 Cadmium NR 7440-47-3 Chromium NR 7440-48-4 Cobalt NR 7439-89-6 Iron NR 7439-95-4 Magnesium NR 7439-97-6 Mercury NR 7440-02-0 Nickel NR 7440-22-4 Selenium NR 7440-22-4 Silver NR 7440-28-0 Thallium NR | | | | |
| 7440-62-2 Vanadium | | | | |
| Color Before: Clarity Before: Texture: | | | | |
| Color After: Artifacts: | | | | |
| Comments: | | | | |

FORM I - IN

INORGANIC ANALYSES DATA SHEET EPA SAMPLE NO.

| Lab Name: AQUATEC Contract: 91082 | | | | | K40235W | |
|---|------------------------|-----------------------|---------------|--------------|----------------|--|
| Lab Code: AQUA | . Cas | se No.: BIO | SAS No.: | } | SDG No.: 39976 | |
| Lab Code: AQUAI_ Case No.: BIO_ SAS No.: SDG No.: 39976_ Matrix (soil/water): FISH_ Lab Sample ID: 200519 | | | | | | |
| | | | | | ived: 10/12/93 | |
| | | | | | | |
| % Solids: 100.0 | | | | | | |
| Concentration Units (ug/L or mg/kg dry weight): MG/KG | | | | | | |
| | CAS No. | Analyte | Concentration | C Q | м | |
| | 7429-90-5 | Aluminum | | - | NR | |
| | | Antimony - | | | NR | |
| | 7440-38-2 | Arsenic | | | NR | |
| | 7440-39-3 | Barium | | _ | NR | |
| | 7440-41-7 7440-43-9 | | | - | NR NR | |
| | 7440-43-9 | Calcium | | - | NR NR | |
| | 7440-47-3 | | | - | NR | |
| | 7440-48-4 | | | - | NR | |
| | 7440-50-8 | Copper | | - | NR | |
| | 7439-89-6 | Iron | | | NR | |
| | 7439-92-1 | Lead | | | NR | |
| | | Magnesium | | | NR | |
| | 7439-96-5 7439-97-6 | Mercury | 0.01 | B | NR CV | |
| | 7440-02-0 | Nickel — | | | NR | |
| | 7440-09-7 | Potassium | | - | NR | |
| | 7782-49-2 | Selenium_ | | | NR | |
| | 7440-22-4 | | | | NR | |
| | 7440-23-5 | | | _ | NR | |
| | 7440-28-0 7440-62-2 | Thallium_ Vanadium | | [| NR NR | |
| | 7440-62-2 | Zinc | |]- | NR | |
| | 7440 00 0 | Cyanide | | - | NR | |
| | | | | | | |
| Color Before: | | Clari | ty Before: | · | Texture: | |
| Color After: | | Clari | ty After: | | Artifacts: | |
| Comments: | | | | | | |
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FORM I - IN

1 INORGANIC ANALYSES DATA SHEET

| | | INORGANIC I | ANALYSES DATA S | SHEET | , |
|---------------------------------------|-------------------------|----------------------|-----------------|--------------|-----------------|
| Lab Name: AQUA | TEC | | Contract: 91 | L082 | K40236W |
| ab Code: AQUAI Case No.: BIO SAS No.: | | | | | SDG No : 39976 |
| an code. Agon | | se 110 DI | | | 220 110 33370_ |
| Matrix (soil/w | ater): FISH | - | | Lab Samp | le ID: 200520 |
| evel (low/med | | | | Date Rec | eived: 10/12/93 |
| Solids: | 100. | D | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony - | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | |]_ | NR |
| | 7440-41-7 7440-43-9 | Beryllium Cadmium | | - | NR NR |
| | 7440-70-2 | Calcium | | - | NR |
| | 7440-47-3 | | | - | NR |
| | 7440-48-4 | | | 1-1 | NR |
| | 7440-50-8 | Copper | |]- | NR |
| | 7439-89-6 | Iron | | | NR |
| | 7439-92-1 | Lead | | _ | NR |
| | 7439-95-4 | | | 1_1 | NR |
| | 7439-96-5 | Manganese | | B | NR |
| | 7439-97-6 7440-02-0 | Mercury Nickel | 0.01 | B | CV |
| | 7440-02-0 | Potassium | | - | NR NR |
| | 7782-49-2 | | | - | NR |
| | 7440-22-4 | | | - | NR |
| | 7440-23-5 | Sodium | | - | NR |
| | 7440-28-0 | | | | NR |
| | 7440-62-2 | Vanadium_ | | | NR |
| | 7440-66-6 | Zinc | | | NR |
| | | Cyanide | | _ | NR |
| | | l | l | 1_1 | _ |
| Color Before: | | Clari | ty Before: | · | Texture: |
| olor After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
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1 INORGANIC ANALYSES DATA SHEET

| EPA | SAMPLE | NO. |
|-----|--------|-----|
|-----|--------|-----|

| | INONGMITE | WINDISES DAIN S | ,,,,,,,,,, | |
|--|---|---------------------------------------|---|--|
| b Name: AQUATEC_ | | Contract: 91 | 1082 | K40237W |
| ab Code: AQUAI_ | | | | SDG No.: 39976 |
| trix (soil/water) | | | | e ID: 200521 |
| evel (low/med): | LOW | | Date Rece | ived: 10/12/93 |
| | | | | |
| Solids: | 100.0 | | | |
| Concent | cration Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | | | | |
| CAS | No. Analyte | Concentration | C Q | M |
| 7429 | 9-90-5 Aluminum | | - | NR |
| The state of the s | 0-36-0 Antimony | | | NR |
| 1 · · · · | 0-38-2 Arsenic | | | NR |
| | 0-39-3 Barium D-41-7 Beryllium | | | NR NR |
| | 0-43-9 Cadmium | · · · · · · · · · · · · · · · · · · · | - | NR |
| | 0-70-2 Calcium | | - | NR |
| 1 | 0-47-3 Chromium | | - | NR |
| 7440 | 0-48-4 Cobalt | | | NR |
| | 0-50-8 Copper | | | NR |
| 3 | 9-89-6 Iron | | | NR |
| I I | 9-92-1 Lead | | _ - | NR |
| | 9-95-4 Magnesium 9-96-5 Manganese | | - | NR NR |
| | 9-96-5 Manganese 9-97-6 Mercury | 0.01 | | CV |
| | 0-02-0 Nickel | | | NR |
| | 0-09-7 Potassium | | - | NR |
| | 2-49-2 Selenium | | - | NR |
| | 0-22-4 Silver | | | NR |
| Į · · · | 0-23-5 Sodium | | | NR |
| l l | 0-28-0 Thallium | | _ | NR |
| | D-62-2 Vanadium_ D-66-6 Zinc | | - | NR NR |
| / ' | Cvanide | | - | NR |
| l | | | | <u> </u> |
| olor Before: | Clari | ty Before: | | Texture: |
| olor After: | Clari | ty After: | | Artifacts: |
| omments: | | | | |
| | | | | |
| | 77.7.7.7.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1. | | | |
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FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

| | | INORGANIC A | ANALYSES DATA S | SHEET | 1 |
|-------------------------------|------------------------|----------------------|-----------------|--|------------------|
| ab Name: AQUA | TEC | | Contract: 91 | 1082 | K40238W |
| ab Code: AQUAI_ Case No.: BIO | | | SAS No.: | | SDG No.: 39976 |
| | | | | | |
| atrix (soil/w | ater): FISH | _ | | Lab Samp | ole ID: 200522 |
| evel (low/med |): LOW_ | _ | | Date Rec | ceived: 10/12/93 |
| Solids: | 100. | 0 | | | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight) | : MG/KG |
| | CAS No. | Analyte | Concentration | C Q | M |
| | 7429-90-5 | | | - | NR |
| | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 7440-41-7 | Barium_ Beryllium | |]- | NR NR |
| | 7440-41-7 | Cadmium | | - | - NR |
| | 7440-70-2 | | | - | NR |
| | 7440-47-3 | | | - | NR |
| | 7440-48-4 | | | - | NR |
| | 7440-50-8 | Copper | | - | NR NR |
| | 7439-89-6 | Iron | | | NR |
| | , | Lead | | | NR |
| | | Magnesium | | | NR |
| | 7439-96-5 | Manganese | | | _\NR\ |
| | 7439-97-6 | Mercury_ | 0.01 | B | CV |
| | 7440-02-0 | Nickel | | 1_1 | NR |
| | 7440-09-7 | | | _ | NR |
| | 7782-49-2 | | | _ | _ NR |
| | 7440-22-4 | | | | NR |
| | 7440-23-5 7440-28-0 | Sodium Thallium | | | NR NR |
| | 7440-28-0 | Vanadium | | - | - NR |
| | 7440-62-2 | Zinc | | - | - NR |
| | , 110 00 0 | Cyanide | | - | NR |
| | | | | <u> </u> | |
| olor Before: | | Clari | ty Before: | ı. | Texture: |
| olor After: | | Clari | ty After: | | Artifacts: |
| omments: | · | | | | |
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1 INORGANIC ANALYSES DATA SHEET

| EPA | CN | MPI | _ | NO. |
|-----|----|------|-----|-----|
| EFA | 25 | UTFI | ىتد | 110 |

| Lab Name: AQUA | TEC | | Contract: 91 | 1082 | K40328W |
|--------------------|------------------------|-----------------------|-----------------|------------|-----------------|
| Lab Code: AQUA | | | | | SDG No.: 39976 |
| | _ | | | | _ |
| Matrix (soil/wa | ater): FISH | - | | rap Sambi | le ID: 201576 |
| Level (low/med |): LOW_ | _ | | Date Rece | eived: 10/15/93 |
| % Solids: | 100. | _ n | | | |
| % 5011 us : | 100. | U | | • | |
| Co | ncentration | Units (ug | /L or mg/kg dry | y weight): | MG/KG |
| | 1 | 1 | | | |
| | CAS No. | Analyte | Concentration | C Q | М |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony | | | NR |
| | 7440-38-2 | Arsenic | | - | NR |
| | 7440-39-3 | Barium | | | NR |
| | 7440-41-7 | | | | NR |
| | 7440-43-9 | | | | NR |
| | 7440-70-2 | Calcium | | | NR |
| | 7440-47-3 | Chromium | | | NR |
| | 7440-48-4 | | | | NR |
| | 7440-50-8 | Copper | | | NR |
| | 7439-89-6 | Iron | | | NR |
| | | Lead | | _ | NR |
| - | 7439-95-4 | Magnesium | | | NR |
| | 7439-96-5 | Manganese | | | NR |
| | 7439-97-6 | Mercury_ | 0.04 | - | CV |
| | 7440-02-0 | Nickel | | - | NR |
| | 7440-09-7 7782-49-2 | Potassium Selenium | | - | NR NR |
| | 7440-22-4 | Silver | | - | NR NR |
| | 7440-23-5 | Sodium | | - | NR |
| | 7440-28-0 | | | - | NR |
| | 7440-62-2 | Vanadium_ | | - | NR |
| | 7440-66-6 | Zinc | | - | NR |
| | | Cyanide | | - | NR |
| | | | | - | |
| - 1 | | | | | |
| Color Before: | | Clari | ty Before: | ··· | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
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FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

| Lab Name: AQUA | rec | | Contract: 91 | 1082 | K40329W |
|-----------------|--------------------------|----------------------|----------------|------------|-----------------|
| | | | | | SDG No.: 39976_ |
| | _ | | , SAS NO | | |
| Matrix (soil/wa | ater): FISH_ | - | | Lab Sampl | le ID: 201577 |
| Level (low/med) |): LOW_ | _ | | Date Rece | eived: 10/15/93 |
| % Solids: | 100.0 | 0 | | | |
| Cor | ncentration | Units (ug | L or mg/kg dry | y weight): | MG/KG |
| | CAS No. | Analyte | Concentration | C Q | м |
| | 7429-90-5 | Aluminum | | - | NR |
| | 7440-36-0 | Antimony_ | | | NR |
| | 7440-38-2 | Arsenic | | | NR |
| | 7440-39-3 | Barium | | _ | NR NR |
| | 7440-41-7 7440-43-9 | Beryllium Cadmium | | - | NR |
| | 7440-70-2 | Calcium | | - | NR |
| | 7440-47-3 | Chromium | | - | NR |
| | 7440-48-4 | Cobalt | | - | NR |
| | 7440-50-8 | Copper | | - | NR |
| | 7439-89-6 | Iron | | - | NR |
| | 7439-92-1 | Lead | | - | NR |
| | | Magnesium | | | NR |
| | | Manganese | | | NR |
| | 7439-97-6 | Mercury | .0.06 | _ | cv |
| • | L | Nickel | |]_ | NR |
| | 7440-09-7 | Potassium | | _ | NR |
| | 7782-49-2 7440-22-4 | Selenium_ Silver | | - | NR NR |
| | 7440-23-5 | Sodium | | - | NR |
| | 7440-23-3 | Thallium | | l-I | NR |
| | 7440-62-2 | Vanadium_ | | <u> </u> | NR |
| | 7440-66-6 | Zinc | | - | NR |
| | | Cyanide | | - | NR |
| | | | | | 1_1 |
| Color Before: | | Clari | ty Before: | | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | | | |
| | | | | | |

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| | | INORGANIC A | ANALYSES DATA S | SHEET | 1 |
|-------------------------------|---|--|-----------------|----------|----------------------|
| Lab Name: AQUA | TEC | | Contract: 9: | 1082 | K40330W |
| | | | | | SDG No.: 39976_ |
| Matrix (soil/w | _ | | | | ple ID: 201578 |
| Level (low/med |): LOW | | | Date Re | ceived: 10/15/93 |
| % Solids: | | | | | |
| | | • | /L or mg/kg dry | y weight |): MG/KG |
| | 7429-90-5 7440-36-0 7440-38-2 7440-41-7 7440-43-9 7440-47-3 7440-47-3 7440-48-4 7440-50-8 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-28-0 | Aluminum_ Antimony_ Arsenic_ Barium | 0.05 | C Q | M |
| Color Before: Color After: | 7440-62-2 7440-66-6 | Vanadium_ Zinc_ Cyanide_ Clari | ty Before: | | Texture: Artifacts: |
| Comments: | | | | | |

FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

| Lab Name: AQUA | TEC | | Contract: 91 | 1082 | K40331W |
|----------------|---|---|----------------|----------|--|
| | | | | | SDG No.: 39976_ |
| Matrix (soil/w | | | | | ple ID: 201579 |
| Level (low/med |): LOW_ | _ | | Date Re | ceived: 10/15/93 |
| Solids: | 100. | 0 | | | |
| | ncentration | Units (ug/ | L or mg/kg dry | y weight |): MG/KG |
| | CAS No. | Analyte | Concentration | c Q | м |
| | 7429-90-5 7440-36-0 7440-38-2 7440-39-3 7440-41-7 7440-43-9 7440-70-2 7440-47-3 7440-48-4 7440-50-8 7439-92-1 7439-95-4 7439-95-4 7439-96-5 7439-97-6 7440-02-0 7440-09-7 7782-49-2 7440-23-5 7440-23-5 7440-66-6 | Antimony Arsenic Barium Beryllium Cadmium Calcium Chromium Cobalt Copper Iron Lead Magnesium Manganese Mercury Nickel Potassium Selenium Silver Sodium Thallium | | | NR NR NR NR NR NR NR NR NR NR NR NR NR N |
| Color Before: | | l | ty Before: | 1_1 | Texture: |
| Color After: | | Clari | ty After: | | Artifacts: |
| Comments: | | | - | | |

FORM I - IN

ILM02.1

1 INORGANIC ANALYSES DATA SHEET

| Lab Name: AQUA | TEC_ | | Contract: 91 | 108 | 32 | K40332W |
|----------------|-------------|------------|-----------------|------------|-------------|-----------------|
| Lab Code: AQUA | Ca | se No.: BI | D_ SAS No.: | : _ | | SDG No.: 39976_ |
| Matrix (soil/w | ater): FISH | | | La | ab Sampl | le ID: 201580 |
| Level (low/med |): LOW_ | | | Da | ate Rece | eived: 10/15/93 |
| Solids: | 100. | 0 | | | | |
| | | Units (ug | /L or mg/kg dry | , r | veight): | MG/KG |
| | 1 | 1 | 1 | | | 1 |
| | CAS No. | Analyte | Concentration | С | Q | М |
| | 7429-90-5 | Aluminum | | - | | NR |
| | 7440-36-0 | Antimony - | | _ | | NR |
| | | Arsenic | | | | NR |
| | • | Barium | | _ | | NR |
| | | Beryllium | | _ | | NR |
| | | Cadmium_ | | _ | | NR |
| | 1 | Calcium | | - | | NR |
| | 7440-47-3 | Chromium | | - | | NR NR |
| | P . | | | _ | | NR NR |
| | | Copper | | - | | NR NR |
| | | Lead | | - | | NR |
| | | Magnesium | | - | | NR |
| | | Manganese | | - | | NR |
| | 1 | Mercury | 0.02 | - | | cv |
| | | Nickel | | – | | NR |
| | 1 | Potassium | | - | | NR |
| | | Selenium | | - | | NR |
| | 7440-22-4 | Silver | | - | | NR |
| | | Sodium | | - | | NR |
| | | Thallium | | - | | NR |
| | 7440-62-2 | Vanadium | | - | | NR |
| | 7440-66-6 | Zinc | | - | | NR |
| | | Cyanide_ | | | | NR |
| | | l | l | I | l | |
| Color Before: | | Clari | ty Before: | | _ | Texture: |
| Color After: | | Clari | ty After: | | _ | Artifacts: |
| Comments: | | | | | | |

MISCELLANEOUS PARAMETERS

MISCELLANEOUS PARAMETERS

| Sample ID | Description | Sex | % Lipids |
|-----------|--------------|--------|----------|
| K40211W | White Sucker | male | 3.24 |
| K40212W | White Sucker | male | 1.34 |
| K40228W | White Sucker | female | 0.83 |
| K40229W | White Sucker | male | 0.73 |
| K40230W | White Sucker | male | 0.86 |
| K40231W | White Sucker | male | 0.78 |
| K40232W | White Sucker | male | 1.41 |
| K40233W | White Sucker | male | 0.80 |
| K40234W | White Sucker | male | 0.73 |
| K40235W | White Sucker | male | 0.91 |
| K40236W | White Sucker | male | 0.72 |
| K40237W | White Sucker | male | 0.73 |
| K40238W | White Sucker | female | 0.86 |
| K40328W | White Sucker | female | 0.73 |
| K40329W | White Sucker | female | 0.71 |
| K40330W | White Sucker | female | 0.76 |
| K40331W | White Sucker | male | 0.66 |
| K40332W | White Sucker | male | 0.85 |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH01

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH01 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| | | | | | | 25 | s | | |
|-----------|--------|--------|------------------|----------|-----|-----|-----|--------|--|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %LIPID | |
| K40500 | 345205 | tissue | 10/14/97 | | | × | | × | |
| K40502 | 345207 | tissue | 10/14/97 | | | х | | x | |
| K40503C | 345208 | tissue | 10/14/97 | | | x | | _x | |
| K40506 | 345209 | tissue | 10/14/97 | | | x | | x | |
| K40507 | 345210 | tissue | 10/14/97 | | | x | | x | |
| K40508K | 345211 | tissue | 10/14/97 | | | x | | × | |
| K40509 | 345212 | tissue | 10/14/97 | | | х | | _ x | |
| K40511 | 345214 | tissue | 10/14/97 | | | x | | x | |
| K40512 | 345215 | tissue | 10/14/97 | | | x | | × | |
| K40513 | 345216 | tissue | 10/14/97 | | | × | | x | |
| K40514 | 345217 | tissue | 10/14/97 | <u> </u> | | x | | x | |
| K40515 | 345218 | tissue | 10/14/97 | | | × | | × | |
| K40516 | 345219 | tissue | 10/14/97 | | | x | | × | |
| K40504-C1 | 345418 | tissue | 10/14/97 | | | x | | x | |
| K40504-C2 | 345419 | tissue | 10/16/97 | | | x | | x | |
| K40504-C | 345420 | tissue | 10/14/97 | | | x | | × | |
| K40517-C | 345421 | tissue | 10/15/97 | | | x | | x | |
| K40518-C | 345422 | tissue | 10/15/97 | | | x | | x_ | |
| K40519-C | 345423 | tissue | 10/15/97 | | | x | | x | |
| K40520-C | 345424 | tissue | 10/15/97 | | | x | | x | |
| | | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis—It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2 Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4 Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA_ |
|--|-------------|----|---|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | <u> </u> | | |
| Are the sample numbers included in the narrative? | X | | ************************************** |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | <u> </u> | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | <u> </u> | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | *************************************** |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | | X | |
| Were matrix spikes analyzed at the required frequency? | | X | ************ |
| How many spike recoveries were outside of QC limits? | | | |
| NA out of NA | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| NA out of NA | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |

PCB Data Review Checklist - Page 3

| | YES_ | NO | NA_ |
|--|----------|--|-----|
| Was GC/MS confirmation provided when required? | | The Control of the Co | X |
| Compound Quantitation and Reported Detection Limits | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surre | ogates |
|-----------|--------------|---------------------------------------|----------|
| | | TCX | DCB |
| K40500 | +5 | | |
| K40502 | +5 | | |
| K40503C | +5 | | |
| K40506 | +5 | | |
| K40507 | +5 | | |
| K40508K | +5 | | |
| K40509 | +5 | D | D |
| K40511 | +5 | | |
| K40512 | +5 | | |
| K40513 | +5 | | |
| K40514 | +5 | | |
| K40515 | +5 | • | |
| K40516 | +5 | | |
| K40504-C1 | +5 | · | |
| K40504-C2 | +5 | | <u> </u> |
| K40504-C | +5 | | |
| K40517-C | +10 | | |
| K40518-C | +10 | | |
| K40519-C | +10 | | |
| K40520-C | +10 | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out ī

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 1/28/98- | 1/30/98 | 1/30/98 | 1/31 | 1/31 | 1/31 | 1/31 | 1/31 |
|----------------------|----------------|---------------|---------------|---------------|---------------|---------------|--------------|-------------|
| Time: | 1/29/98 | 2118 | 2145 | 2156 | 0337 | 0902 | 0929 | 1307 |
| | Initial Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Çal. | Cont. Cal | Cont Cal |
| | %RSD | %D | %D | %D | % D | %D | % D | % D |
| Aroctor 1016 | ok | | | | | | ļ | |
| Arocior 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | <u> </u> | | |
| Arocior 1242 | ok | | ok | | | | | |
| Aroclor 1248 | ok | ok | | ok | | ok | | ak |
| Aroclor 1254 | ok | | | | ok | | | |
| Aroclor 1260 | ok | | | | | <u> </u> | ok | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | , | | | | | |
| Affected Samples: | | | | | - | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 2/04/98- | 2/05/98 | 2/05/98 | | | | | |
|----------------------|-----------------|---------------|---------------|---------------|---------------|--------------|---------------|----------|
| Time: | 2/05/98 | 1308 | 1335 | | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. | Cont. |
| | %RSD | %D | %D | %D | %D | % D | %D | %0 |
| Aroclor 1016 | ok | | | | | | | |
| Aractor 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Arocior 1242 | ok | | ok | | | | | |
| Arocior 1248 | ok | ok | | | | | | <u> </u> |
| Aroclor 1254 | ok | | | | | | | ļ |
| Arocior 1260 | ok | <u> </u> | | | | | | ļ |
| Tetrachioro-m-xylene | ak | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

| | | | | | K40500 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample iD: | 345205 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 pe Jak | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | m 12 |
| 11104-28-2 | Aroctor-1221 | 100 | B 2 |
| 11141-16-5 | Aroclor-1232 | 100 | W 105 |
| 53469-21-9 | Arocior-1242 | 100 | N 102 |
| 12672-29-6 | Arocior-1248 | 330 | 7 |
| 11097-69-1 | Arocior-1254 | 450 | 7 |
| 11096-82-5 | Araciar-1260 | 94 | J |

| | | | | · · | | |
|-------------------|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | K40503C |
| Contract: | 91082 | - - | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345208 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | | | Date Analyzed: | 01/31/98 | |
| % Solids: | Tooler when | _ | | Sulfur Clean-up: | Y | (Y/N) |
| | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | # W2 |
| 11104-28-2 | Aroclor-1221 | 100 | R 112 |
| 11141-16-5 | Arocior-1232 | 100 | The rest |
| 53469-21-9 | Arocior-1242 | 100 | 1 14 14 |
| 12672-29-6 | Arocior-1248 | 100 | EN R |
| 11097-69-1 | Arocior-1254 | 1000 | 7 |
| 11096-82-5 | Aroctor-1260 | 97 | J |

| | | | | | K40507 |
|-------------------|-------------------|--------------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | (| |
| Contract: | 91082 | _ Case: | РСВ | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345210 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| injection Volume: | 1,0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 01/31/98 | |
| % Solids: | Jos ax | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 100 | 4 NJ | |
| 11104-28-2 | Aroctor-1221 | 100 | n 12 | |
| 11141-16-5 | Aroclor-1232 | 100 | R M | |
| 53469-21-9 | Araclar-1242 | 100 | W W | |
| 12672-29-6 | Arocior-1248 | 470 | 7 | |
| 11097-69-1 | Arocior-1254 | 630 | 7 | |
| 11096-82-5 | Aroctor-1260 | 180 | 7 | |

| | | | | | | K40509 |
|-------------------|-------------------|--------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345212 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 20.0 | | | Date Analyzed: | 01/31/98 | |
| % Solids: | Job per lak | - - | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 1000 | W # W | |
| 11104-28-2 | Arocior-1221 | 1000 | \$ W | |
| 11141-16-5 | Aroclor-1232 | 1000 | 8 5 | |
| 53469-21-9 | Aroclor-1242 | 3000 | 7 | |
| 12672-29-6 | Aroclor-1248 | 1000 | A U | |
| 11097-69-1 | Aroclor-1254 | 13000 | 2 | |
| 11096-82-5 | Aroclor-1260 | 1300 | 7 | |

| | | | | | | K40512 | - |
|------------------|-------------------|-------------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PC8 | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345215 | | _ |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 10.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 204 pt 1946 | - - | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 500 | # W7 | |
| 11104-28-2 | Aroclor-1221 | 500 | 1 R 12 | |
| 11141-16-5 | Aroclor-1232 | 500 | 1 W W | |
| 53469-21-9 | Arocior-1242 | 500 | W 40 | |
| 12672-29-6 | Aroctor-1248 | 500 | L 12 | |
| 11097-69-1 | Aroctor-1254 | 5200 | . 7 | |
| 11096-82-5 | Arocior-1260 | 810 | 7 | |

| | | | | | | K40514 |
|-------------------|-------------------|-------------|-------|------------------|------------|--------|
| Lab Name: | ITS Environmental | _ Lat | Code: | INCHVT | | |
| Contract: | 91082 | · - | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345217 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 0 1/3 1/98 | |
| % Solids: | المرسود | | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | I & W | |
| 11104-28-2 | Aroclor-1221 | 50 | Z . Z | |
| 11141-16-5 | Aroclor-1232 | 50 | W 12 | |
| 53469-21-9 | Arocior-1242 | 50 | # W | |
| 12672-29-6 | Arocior-1248 | 530 | 7 | |
| 11097-69-1 | Aroclor-1254 | 370 | 7 | |
| 11096-82-5 | Aroclor-1260 | 71 | 7 | |

| | | | | | | K40516 | |
|------------------|-------------------|------|-----------|------------------|------------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PC8 | SDG: | FISHO1 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345219 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 0 1/3 1/98 | | |
| % Solids: | Jedge 108 | _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 250 | 2 4 | |
| 11104-28-2 | Arocior-1221 | 250 | TH W | |
| 11141-16-5 | Arocior-1232 | 250 | J 47 | |
| 53469-21-9 | Aroclor-1242 | 250 | 1 y 45 | |
| 12672-29-6 | Arocior-1248 | 250 | 1 4 | |
| 11097-69-1 | Aroclor-1254 | 2000 | 7 | |
| 11096-82-5 | Arocior-1260 | 350 | 7 | |

EPA SAMPLE NO.

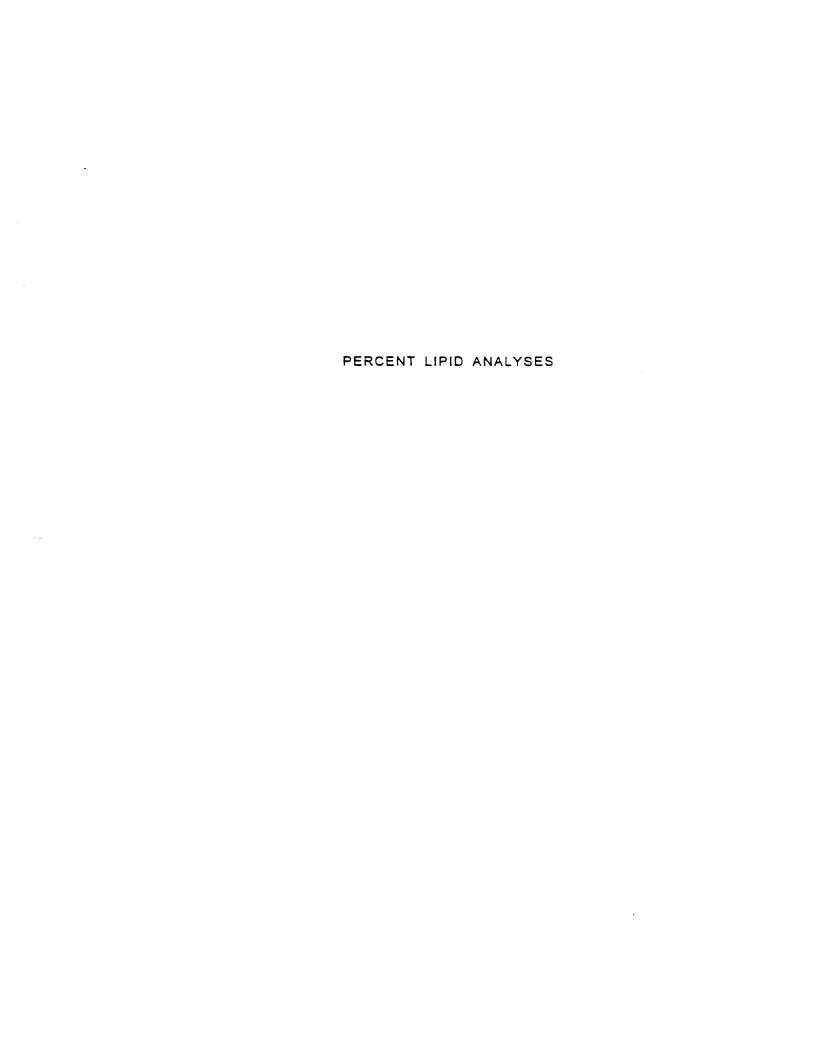
| | | | | | K | 40517-C |
|-------------------|-------------------|------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345421 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | |
| % Solids: | 190 pe 108 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | # UT | |
| 11104-28-2 | Aroclor-1221 | 50 | 14 W. | |
| 11141-16-5 | Aroclor-1232 | 50 | EN A | |
| 53469-21-9 | Aroclor-1242 | 50 | IN W | |
| 12672-29-6 | Aroclor-1248 | 50 | 1 4 0 | |
| 11097-69-1 | Aroclor-1254 | 200 | 7 | |
| 11096-82-5 | Arocior-1260 | 39 | J | |

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| | | | | | | K40519-C |
|-------------------|-------------------|--------------|-----------|------------------|----------|----------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | · |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345423 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | |
| % Solids: | 200 chilas | - | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | 2N R | |
| 11104-28-2 | Aroctor-1221 | 50 | IN B | |
| 11141-16-5 | Arocior-1232 | 50 | Tu u | |
| 53469-21-9 | Arocior-1242 | 50 | D 44 | |
| 12672-29-6 | Arocior-1248 | 50 | The A | |
| 11097-69-1 | Arocior-1254 | 230 | 7 | |
| 11096-82-5 | Aroctor-1260 | 43 | j | |



Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|---|--------|
| K40500 | 345205 | tissue | 0.5% |
| K40502 | 345207 | tissue | 0 6% |
| K40503C | 345208 | tissue | 1.0% |
| K40506 | 345209 | tissue | 16.7% |
| K40507 | 345210 | tissue | 2.1% |
| K40508K | 345211 | tissue | 3.6% |
| K40509 | 345212 | tissue | 10 3% |
| K40511 | 345214 | tissue | 4.2% |
| K40512 | 345215 | tissue | 3.5% |
| K40513 | 345216 | tissue | 5 4% |
| K40514 | 345217 | tissue | 2.8% |
| K40515 | 345218 | tissue | 5.5% |
| K40516 | 345219 | tissue | 1.3% |
| K40504-C | 345420 | tissue | 2.1% |
| K40517-C | 345421 | tissue | 0.4% |
| K40518-C | 345422 | tissue | 0.5% |
| K40519-C | 345423 | tissue | 0.6% |
| K40520-C | 345424 | tissue | 0.6% |
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| L4524711 | 150.14 | ハイプィ | n R | was A | Parelad | EL | ١. | 10 | ١., | | | \mathcal{J} | | | / / / / | | | | |
| SAMPLERS: 15- | nelupl | <u> </u> | 3'-'Y | 2 | A siteon | 7.3 | 7 |)¢ | 1/3/ | . / | 4 | V, | / , | Ι, | | | | | |
| Kel DYK | | | | | | | | | , | r/v | A CONTRACTOR | | | | // | | | | |
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| STA. NO. DAT | TIME | 8 | 24.0 | | STATIO | ON LOCATION | '^' | MENS | | 21837 | 6/9/ | | | | | | | | |
| 40500 Idm | ها [] | | X | New R | chrond | - ABSA#11 | 1 | | X | X | | | | | Fillet and analyze tollowing analytical pocedure | | | | |
| K4050) | | | 1 | | | | | | | | | | | | chisensial previously | | | | |
| K40502 | | | X | | | \ | | | | | | | | | | | | | |
| K40503 C | | X | | | | | | | | | | | | | Analyze whole-bank composite escherchil above | | | | |
| 9501-CI | 1 | x | | | | 1 | | l | | <u> </u> | | | | | Retain for combination Wadlit mad Sarples | | | | |
| 40512 | | | X | | | | 7 | | | | | | | | Fillet and Gnelyze Pallowing Goelyhead | | | | |
| 4-513 | | | Ī. | | _7 | | | | | | | | | | Description (1200214 Distribution) | | | | |
| 40514 | | | | | | | | | | | | | 1 | | A Tree A | | | | |
| 40515 | | | | | | • | | | | | | | | | | | | | |
| 40516 | | | | | | | | | | | | | | | | | | | |
| 10214 | | | | | | | - | | | | | | | | | | | | |
| | 1 | | | | | | 1 | | | | | - | | | | | | | |
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| Relinguished by: (Signature) Date / Time Received for Laborator | | | | 0 | y by: Date / Time Remarks Nepox 18/14/11 0930 | | | | | | emar | rke | | | | | | | |
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| K40523 | | | | | | | Ш | | | | _ _ | CMP (Skin-off fillets) SM Bus (Skin-on, |
| K40524 | | | | | | | Ш | | | | _ _ | _ scurs-on likets). |
| K40525 | | | | | | <u> </u> | Ш | | | | _ | |
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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH02

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review pe formed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH02 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| 1 | | | | Analyses | | | | | |
|-----------|-------------|--------|------------------|----------|--------------|--|--------------|--------------|--|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %LIPIC | |
| K40521 | 345425 | tissue | 10/15/97 | <u> </u> | | × | | x | |
| K40522 | 345426 | tissue | 10/15/97 | | | x | | x | |
| K40523* | 345427 | tissue | 10/15/97 | | | x | | X | |
| K40525 | 345429 | tissue | 10/15/97 | 1 | | x | | × | |
| K40526 | 345430 | tissue | 10/15/97 | | | x | | x | |
| K40527 | 345431 | tissue | 10/15/97 | | | x | | x | |
| K40528 | 345432 | tissue | 10/15/97 | | | x | | x | |
| K40529 | 345433 | tissue | 10/15/97 | | | х | | x | |
| K40530-C | 345434 | tissue | 10/15/97 | | | x | | × | |
| K40531-C | 345435 | tissue | 10/16/97 | | | x | | X | |
| K40532-C | 345436 | tissue | 10/16/97 | | | × | | × | |
| K40533-C | 345437 | tissue | 10/16/97 | | | × | | x | |
| K40535 | 345438 | tissue | 10/17/97 | | | x | | x | |
| K40536 | 345439 | tissue | 10/17/97 | | | × | | × | |
| K40537 | 345440 | tissue | 10/17/97 | | | x | | x | |
| K40538 | 345441 | tissue | 10/17/97 | | | x | | × | |
| K40539 | 345442 | tissue | 10/17/97 | | | × | | x | |
| K40540 | 345443 | tissue | 10/17/97 | | | x | | × | |
| | | | | | | | | - | |
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MS/MSD performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples except K40523, K40523MS and K402523MSD were analyzed beyond the specified holding time. Based on the deviation, data for all samples except K40523, K40523MS and K40523MSD have been qualified as estimated.

Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

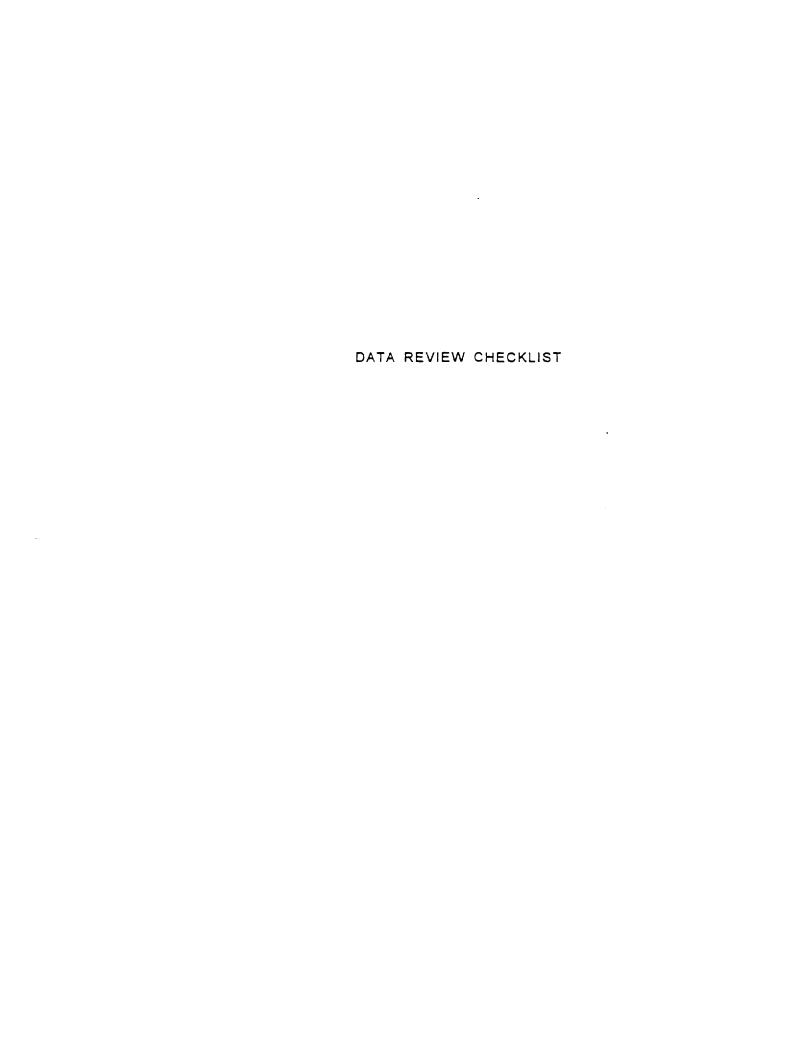
The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.



PCB Data Review Checklist

| | YES | NO | NA_ |
|--|-----|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u></u> | <u></u> |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | · |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| O out of2 | | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | × | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | × |
| Are there field/rinse/equipment blanks associated with every sample? | | | x |

PCB Data Review Checklist - Page 3

| | YES | NO | NA. |
|--|----------|--------------|-------------|
| Was GC/MS confirmation provided when required? | | - | X |
| Compound Quantitation and Reported Detection Limits | <u>i</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | <u> </u> | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surr | ogates |
|-----------|--------------|---------------------------------------|--------|
| | | TCX | DCB |
| K40521 | +28 | | |
| K40522 | +28 | | |
| K40523 | | | |
| K40523MS | | | |
| K40523MSD | | | |
| K40525 | +28 | | |
| K40525 | +28 | | |
| K40527 | +28 | · · · · · · · · · · · · · · · · · · · | |
| K40528 | +28 | | |
| K40529 | +28 | | |
| K40530-C | +28 | · | |
| K40531-C | +28 | | |
| K40532-C | +28 | | |
| K40533-C | +28 | | |
| K40535 | +25 | | |
| K40536 | +25 | | |
| K40537 | +25 | | |
| K40538 | +25 | | |
| K40539 | +25 | | |
| K40540 | +25 | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 2/04/98- | 2/05/98 | 2/05/98 | | | | | |
|----------------------|-----------------|---------------|---------------|-------------|-------------|--------------|-------------|-------------|
| Time: | 2/05/98 | 1308 | 1335 | | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | | | | | |
| | %RSD | %D | % D | | | | | |
| Aroclar 1016 | ok | | | | | | | |
| Arocior 1221 | ok | ļ | | | | | | |
| Arcclor 1232 | ok | | | | | | | |
| Aroclar 1242 | ok | | ok | | | | | |
| Aroctor 1248 | ok | ok | | | | | | |
| Arocior 1254 | ok | ļ | | | | | | |
| Aroclor 1260 | ok | | | | | | | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | <u> </u> |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 2/18/98- | 2/20/98 | 2/23/98 | 2/23 | 2/23 | 2/23 | 2/23 | 2/23 |
|----------------------|-----------------|--------------|---------------|----------------|---------------|--------------|--------------|--------------|
| Time: | 2/19/98 | 2317 | 1202 | 1229 | 1745 | 1812 | 2329 | 2355 |
| | Initial Cal. | Cont. Cal | Cont. Cal. | Cont. _Cal. | Cont. Cal. | Cont. Cal | Cont Cal | Cont Cal |
| | %RSD | %D | %D | %D | %D_ | %D | %D | %0 |
| Arocior 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | | | | | <u> </u> |
| Araclar 1242 | ok | ok | | | | | ļ | ok |
| Arocior 1248 | ok | | ok | | ok | | ok | ļ |
| Arocior 1254 | ok | | | ok | | | | |
| Arocior 1260 | ok | | | | ļ | ok | | |
| Tetrachioro-m-xylene | ok | ļ | | | | ļ | | |
| Decachlorobiphenyl | ok | | | | | <u> </u> | | |
| Affected Samples: | | | | | | | ļ | <u> </u> |
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EPA SAMPLE NO.

| | | | | | | K40521 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345425 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | • |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | • |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | _ |
| % Solids: | JUNE HIME | _ | | Suifur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|----------|----|
| 12674-11-2 | Aroclor-1016 | 50 | ম | w |
| 11104-28-2 | Aroclor-1221 | 50 | । प्र | u3 |
| 11141-16-5 | Aroclor-1232 | 50 | T) | U |
| 53469-21-9 | Aroclor-1242 | 50 | H. | W |
| 12672-29-6 | Arocior-1248 | 50 | प्र | w |
| 11097-69-1 | Aroclor-1254 | 28 | J | |
| 11096-82-5 | Aroclor-1260 | 33 | J | |

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| | | | | | | K40523 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | L | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | ВІОТА | _ | | Lab Sample ID: | 345427 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 01/16/98 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/19/98 | | |
| % Solids: | 100 VA AHIAY | | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroctor-1248 | 150 | υ |
| 11097-69-1 | Aroclor-1254 | 150 | υ |
| 11096-82-5 | Aroctor-1260 | 150 | U |

| | | | | | <40526 |
|------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCS | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345430 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 180 th 41148 | - | Sulfur Clean-up: | Y | (Y/N) |

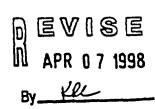
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|---|
| 12674-11-2 | Aroclor-1016 | 50 | 1 4 | W |
| 11104-28-2 | Aroctor-1221 | 50 | , t | a |
| 11141-16-5 | Aroctor-1232 | 50 | R | 2 |
| 53469-21-9 | Aroclor-1242 | 50 | 41 | W |
| 12672-29-6 | Arocior-1248 | 50 | ů. | W |
| 11097-69-1 | Arocior-1254 | 150 | | 7 |
| 11096-82-5 | Arocior-1260 | 38 | J | |

| | | | | | | K40528 | |
|------------------|-------------------|--------------|-----------|------------------|----------|--------|---------------------------------------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | · · · · · · · · · · · · · · · · · · · |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345432 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100 VR 417191 | - | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | * W |
| 11104-28-2 | Arocior-1221 | 50 | 4 00 |
| 11141-16-5 | Arocior-1232 | 50 | 8 10 |
| 53469-21-9 | Araclor-1242 | 50 | R (12) |
| 12672-29-6 | Aroclor-1248 | 50 | # 12 |
| 11097-69-1 | Aroclor-1254 | 120 | 2 |
| 11096-82-5 | Aroclor-1260 | 35 | J |

| | | | | | | (40530-C | |
|-------------------|-------------------|------|-----------|------------------|----------|----------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | - | | Lab Sample ID: | 345434 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100-124/148 | | | Sulfur Clean-up: | Y | | Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--------------|
| 12674-11-2 | Arocior-1016 | 150 | R | w |
| 11104-28-2 | Aroclor-1221 | 150 | 4 | Two |
| 11141-16-5 | Aroclor-1232 | 150 | F. | w |
| 53469-21-9 | Aroclor-1242 | 150 | R | w |
| 12672-29-6 | Arocior-1248 | 480 | 1 | 2 |
| 11097-69-1 | Aroclor-1254 | 640 | | 7 |
| 11096-82-5 | Aroclor-1260 | 150 | J. | |



| | | | | | | K40532-C | |
|------------------|-------------------|------|-------|------------------|----------|----------|-------|
| Lab Name: | ITS Environmental | Lab | Code: | INCHVT | | · | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345436 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | | | Date Analyzed: | 02/23/98 | | • |
| % Solids: | 100 VA 417168 | _ | | Sulfur Clean-up: | Y | | (Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 150 | 1 8 V | |
| 11104-28-2 | Aroctor-1221 | 150 | 20 4 | |
| 11141-16-5 | Aroctor-1232 | 150 | 8 47 | |
| 53469-21-9 | Arocior-1242 | 150 | R W | |
| 12672-29-6 | Aroclor-1248 | 560 | 7 | |
| 11097-69-1 | Arocior-1254 | 780 | - | |
| 11096-82-5 | Aroclor-1260 | 150 | E II | |

| | | | | | | K40535 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|------------------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH02 | : |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345438 | | _ |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | _ |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | _ |
| Dilution Factor: | 5.0 | | | Date Analyzed: | 02/20/98 | | _ |
| % Solids: | 100 PR 41148 | _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|----------|
| 12674-11-2 | Aroclor-1016 | 250 | t t | <u>~</u> |
| 11104-28-2 | Aroclor-1221 | 250 | Th. | W |
| 11141-16-5 | Aroclor-1232 | 250 | ₩. | W |
| 53469-21-9 | Aroclor-1242 | 250 | R | Ű. |
| 12672-29-6 | Aroclor-1248 | 600 | | 7 |
| 11097-69-1 | Aroclor-1254 | 700 | | 7 |
| 11096-82-5 | Aroclor-1260 | 190 | J | |

| | | | | | K40537 |
|------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345440 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| jection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | | Date Analyzed: | 02/20/98 | |
| % Solids: | 180 KR 417148 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND . | CONCENTRATION (ug/Kg) | QUALIFIER | | |
|------------|--------------|--------------------------|-----------|--|--|
| 12674-11-2 | Aroclor-1016 | 100 | A W | | |
| 11104-28-2 | Aroclor-1221 | 100 | 1 L | | |
| 11141-16-5 | Aroclor-1232 | 100 | 4 W | | |
| 53469-21-9 | Aroclor-1242 | 100 | L L | | |
| 12672-29-6 | Arocior-1248 | 100 | 1 W (2 | | |
| 11097-69-1 | Arocior-1254 | 350 | 3 | | |
| 11096-82-5 | Aroclor-1260 | 95 | J | | |

EPA SAMPLE NO.

| | | | | | <40539 |
|-------------------|-------------------|------------|------------------|----------|------------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345442 | |
| Phase Weight: | 10.0 | _ _ (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 100 KK 411198 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | | |
|------------|--------------|--------------------------|-----------|----------------|--|
| 12674-11-2 | Arocior-1016 | 100 | Ш- | W | |
| 11104-28-2 | Aroclor-1221 | 100 | U. | W | |
| 11141-16-5 | Arocior-1232 | 100 | ਦ | Ų. | |
| 53469-21-9 | Arocior-1242 | 100 | Ų. | \overline{x} | |
| 12672-29-6 | Aroclor-1248 | 320 | | 7 | |
| 11097-69-1 | Aroclor-1254 | 650 | | 7 | |
| 11096-82-5 | Aroctor-1260 | 100 | R F | w | |

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Percent Lipids Results

| Result 0.3% 0.3% 0.3% |
|-----------------------|
| 03% |
| 0.3% |
| |
| |
| 0.2% |
| 0.4% |
| 0.8% |
| 0 3% |
| 0 4% |
| 1.6% |
| 2.0% |
| 2.1% |
| 2.5% |
| 1.6% |
| 0.5% |
| 0.2% |
| 1.6% |
| 0.8% |
| 1.3% |
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PLASLAND & BOUCK ENGINEERS, P.C.

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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH03

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:

BBL BLASAND BOUCK B LEE NC.

Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH03 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses Analyses were performed on the following samples:

| | Lab ID | D Matrix | | Anaivses | | | | | |
|-----------|--------|----------|------------------|----------|-----|-----|-----|--------|--|
| Sample ID | | | Sampling Date | VOA | BNA | РСВ | TAL | %LIPID | |
| K40542 | 345446 | tissue | 10/17/97 | | | x | | x | |
| K40543 | 345447 | tissue | 10/16/97 | | | х | | x | |
| K40544 | 345448 | tissue | 10/16/97 | | | x | | x | |
| K40545 | 345449 | tissue | 10/16/97 | | | х | | х | |
| K40546 | 345450 | tissue | 10/16/97 | | | х | | x | |
| K40547 | 345451 | tissue | 10/16/97 | | | x | | x | |
| K40548 | 345452 | tissue | 10/16/97 | | | x | | x | |
| K40549 | 345453 | tissue | 10/16/97 | | | x | | x | |
| K40550 | 345454 | tissue | 10/16/97 | | | x | | x | |
| K40552 | 345510 | tissue | 10/20/97 | | | x | | × | |
| K40553 | 345511 | tissue | 10/20/97 | | | x | | × | |
| K40554 | 345512 | . tissue | 10/20/97 | | | х | | × | |
| K40555 | 345513 | tissue | 10/20/97 | | | x | | × | |
| K40556 | 345514 | tissue | 10/20/97 | | | x | | × | |
| K40557 | 345515 | tissue | 10/20/97 | | | x | | x | |
| K40568 | 345516 | tissue | 10/21/97 | | | × | | × | |
| K40569 | 345517 | tissue | 10/21/97 | | | × | | × | |
| K40570 | 345518 | tissue | 10/21/97 | | | x | | x | |
| K40571 | 345519 | tissue | 10/21/97 | | | x | | x | |
| K40572 | 345520 | tissue | 10/21/97 | | | × | | x | |
| | | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA_ |
|--|-----|-------------|-----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| if yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | | X | |
| Were matrix spikes analyzed at the required frequency? | | <u> </u> | |
| How many spike recoveries were outside of QC limits? | | | |
| NA out of NA | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| NA out of NA | | | |
| <u>Blanks</u> | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | x_ | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |
| | | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA. |
|--|----------|--------------|--------------|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limits | <u> </u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | , | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | - |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surrogates | | | | | |
|-----------|--------------|------------|---------------|--|--|--|--|
| | | TCX | DCB | | | | |
| K40542 | +26 | · | | | | | |
| K40543 | +26 | | | | | | |
| K40544 | +29 | | | | | | |
| K40545 | +26 | | | | | | |
| K40546 | +25 | | | | | | |
| K40547 | +29 | | | | | | |
| K40548 | +26 | | | | | | |
| K40549 | +26 | | | | | | |
| K40550 | +26 | | | | | | |
| K40552 | +26 | | · | | | | |
| K40553 | +26 | | | | | | |
| K40554 | +26 | | | | | | |
| K40555 | +26 | | | | | | |
| K40556 | +25 | | | | | | |
| K40557 | +26 | | | | | | |
| K40568 | +26 | | | | | | |
| K40569 | +26 | | | | | | |
| K40570 | +26 | | | | | | |
| K40571 | +26 | | | | | | |
| K40572 | +26 | | - | | | | |
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Surrogate Standards
TCX Tetrachloro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

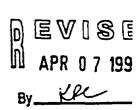
Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 2/18/98- | 2/20/98 | 2/20/98 | 2/21 | 2/21 | 2/21 | 2/21 | 2/21 |
|----------------------|-----------------|----------------|---------------|---------------|--|---------------|--|-------------|
| ime | 2/19/98 | 2251 | 2317 | 0435 | 0001 | 1204 | 1231 | 1748 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont Cal. | Cont Ca: |
| | %RSD | % D | %D | %D | % D | %D | % D | 960 |
| Aroclar 1016 | ok | | | | ļ | | | ļ |
| Aroclor 1221 | ok | | | | | | | <u> </u> |
| Arocior 1232 | ok | | | | | | | <u> </u> |
| Arocior 1242 | ok | | ok | | | | | |
| Araciar 1248 | ok | ok | _ | ok | | ok_ | | ok |
| Aroclar 1254 | ok | | | | ok | | | |
| Arocior 1250 | ok | | | | | <u></u> | oĸ | <u> </u> |
| Tetrachioro-m-xylene | ok | | | | | <u> </u> | | <u> </u> |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | T - | |
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| | CORRECTED | ANALYSIS | SUMMARY | FORMS |
|---|-----------|----------|---------|-------|
| | | | | |
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| | | | | | | K40542 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | L | | |
| Contract: | 91082 | - | Case: | PC8 | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345446 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | · | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 VAC 41148 | • | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|--------------------------|------------|-----|
| 12574-11-2 | Arocior-1016 | 50 | الا | Tal |
| 11104-28-2 | Aroclor-1221 | 50 | 1 4 | 8 |
| 11141-16-5 | Aroclor-1232 | 50 | 75 | B |
| 53469-21-9 | Aroclor-1242 | 50 | 3 4 | B |
| 12672-29-6 | Aroclor-1248 | 250 | | 77 |
| 11097-69-1 | Araclor-1254 | 170 | | 1 |
| 11096-82-5 | Aroclor-1260 | 92 | | 7 |



| | | | | | | K40544 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | ВІОТА | | | Lab Sample ID: | 345448 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 4.0 | | | Date Analyzed: | 02/24/98 | | |
| % Solids: | 100 xx 417198 | | | Sulfur Clean-up: | Y | (\ | Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 200 | W 1/2 | |
| 11104-28-2 | Arocior-1221 | 200 | A 10 | |
| 11141-16-5 | Aroclor-1232 | 200 | # V.2 | |
| 53469-21-9 | Arocior-1242 | 200 | # U | |
| 12672-29-6 | Arocior-1248 | 930 | 7 | |
| 11097-69-1 | Aroclor-1254 | 1400 | 7 | |
| 11096-82-5 | Arocior-1260 | 290 | 7 | |

| | | | | 1 | K40546 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345450 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | · | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 LB 47148 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | D, & | |
| 11104-28-2 | Arocior-1221 | 50 | \$ CD | |
| 11141-16-5 | Aroclor-1232 | 50 | W # | |
| 53469-21-9 | Aroclor-1242 | 50 | EN & | |
| 12672-29-6 | Aroctor-1248 | 430 | 7 | |
| 11097-69-1 | Arocior-1254 | 50 | 1 4 | |
| 11096-82-5 | Aroclor-1260 | 110 | | |

| | | | | <u> </u> | K40548 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISHO3 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345452 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 th althi | • | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 50 | LO AL |
| 11104-28-2 | Arocior-1221 | 50 | 4 10 |
| 11141-16-5 | Arocior-1232 | 50 | 80 |
| 53469-21-9 | Aroctor-1242 | 240 | l JN |
| 12672-29-6 | Aroclor-1248 | 50 | Ju 112 |
| 11097-69-1 | Aroclor-1254 | 50 | R 12 |
| 11096-82-5 | Arocior-1260 | 110 | VIV. |

| | | | | | | K40550 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | <u></u> | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISHOO | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345454 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KR 417148 | _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | THE WORLD | |
| 11104-28-2 | Aroclor-1221 | 50 | 1 4 0 | |
| 11141-16-5 | Arocior-1232 | 50 | W & | |
| 53469-21-9 | Arocior-1242 | 50 | \$ 15 | |
| 12672-29-6 | Aroclor-1248 | 270 seo | 7 | |
| 11097-69-1 | Aroclor-1254 | 230 50 | 74 7 | |
| 11096-82-5 | Arocior-1260 | Ç€C 120 | Ť | |

| | | | | | | K40553 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345511 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KR 4/7/98 | - | | Sulfur Clean-up: | Y | (Y/N) |

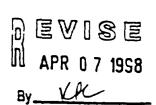
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | A W |
| 11104-28-2 | Arocior-1221 | 50 | 8 00 |
| 11141-16-5 | Arocior-1232 | 50 | EN A |
| 53469-21-9 | Arocior-1242 | 50 | \$ W |
| 12672-29-6 | Arocior-1248 | 50 | W # |
| 11097-69-1 | Arocior-1254 | 87 | 7 |
| 11096-82-5 | Aroclor-1260 | 34 | J |

| Lab Name: Contract: Phase Type: Phase Weight: njection Volume: Dilution Factor: | | | | | K40555 | |
|---|-------------------|-----------|------------------|----------|--------|----|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH03 | |
| Phase Type: | BIOTA | | Lab Sample ID: | 345513 | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | | Date Analyzed: | 02/21/98 | | |
| % Solids: | JOS YEL ATIPS | | Sulfur Clean-up: | Y | (Y/N | 4) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocigr-1016 | 100 | 1 V |
| 11104-28-2 | Aroclor-1221 | 100 | The A |
| 11141-16-5 | Aroclor-1232 | 100 | H 112 |
| 53469-21-9 | Aroclor-1242 | 100 | a m |
| 12672-29-6 | Aroclor-1248 | 100 | N W |
| 11097-69-1 | Arocior-1254 | 310 | 7 |
| 11096-82-5 | Aroctor-1260 | 80 | J |

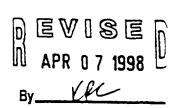
| | | | | × | (40557 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 9 1082 | Case: | PC8 | SDG: | FISH03 |
| Phase Type: | BIOTA | | Lab Sample IO: | 345515 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KRAMI98 | | Sulfur Clean-up: | Y | (Y/N) |
| | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | 1 1 N | |
| 11104-28-2 | Aroclor-1221 | 50 | \$ V | |
| 11141-16-5 | Arocior-1232 | 50 | A M | |
| 53469-21-9 | Aroctor-1242 | 50 | LV A | |
| 12672-29-6 | Aroclor-1248 | 50 | 4 (2) | |
| 11097-69-1 | Aroclor-1254 | 140 | 7 | |
| 11096-82-5 | Arocior-1260 | 32 | J | |



| | | | | | | K40569 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345517 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 VRC 417198 | - | | Sulfur Clean-up: | Y | (| Y/N) |

| CAS NO. | 4-11-2 Arocior-1016 4-28-2 Arocior-1221 1-16-5 Arocior-1232 9-21-9 Arocior-1242 2-29-6 Arocior-1248 7-69-1 Arocior-1254 | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|---|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 250 | 1 4 |
| 11104-28-2 | Arocior-1221 | 250 | En & |
| 11141-16-5 | Arocior-1232 | 250 | 4 CD |
| 53469-21-9 | Arocior-1242 | 250 | 1 # CD |
| 12672-29-6 | Aroctor-1248 | 250 | W 100 |
| 11097-69-1 | Aroclor-1254 | 1400 | 7 |
| 11096-82-5 | Aroclor-1260 | 250 | J |



| | | | | | K40571 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345519 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KRAHAR | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | W 100 |
| 11104-28-2 | Arocior-1221 | 50 | EN A |
| 11141-16-5 | Aroclor-1232 | 50 | R 12 |
| 53469-21-9 | Arocior-1242 | 50 | W W |
| 12672-29-6 | Arocior-1248 | 150 | 7 |
| 11097-69-1 | Aroclor-1254 | 370 | 7 |
| 11096-82-5 | Arocior-1260 | . 47 | J |



Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|---------|--------|
| K40542 | 345446 | tissue | 0.4% |
| K40543 | 345447 | tissue | 1.4% |
| K40544 | 345448 | tissue | 0.3% |
| K40545 | 345449 | tissue | 0.8% |
| K40546 | 345450 | tissue | 0.7% |
| K40547 | 345451 | tissue | 0.6% |
| K40548 | 345452 | tissue | 0.3% |
| K40549 | 345453 | tissue | 0.7% |
| K40550 | 345454 | tissue | 0.7% |
| K40552 | 345510 | tissue | 0.4% |
| K40553 | 345511 | tissue | 0.2% |
| K40554 | 345512 | tissue | 1.0% |
| K40555 | 345513 | tissue | 0.6% |
| K40556 | 345514 | tissue | 0.8% |
| K40557 | 345515 | tisue | 0.3% |
| K40568 | 345516 | tissue | 0.4% |
| K40569 | 345517 | tissue | 1.1% |
| K40570 | 345518 | tissue_ | 0.3% |
| K40571 | 345519 | tissue_ | 0.3% |
| K40572 | 345520 | tissue | 0.4% |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

CHAIN OF CUSTODY



6723 Towpalh Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 448-9120

CHAIN OF CUSTODY RECORD

| | , 110.01 | 2.0 | | | | | | | | | | | | | | 0 |
|----------------------|------------|---------------------|------------|-----------|------------|----------------|--|------------|---------------|-----------------|------------|------------|-------------|------|---|---------------|
| PROJ. NO. | | CT HAM | | ^ | 0 . | | | | v. | / | • / | 7 / | 7 | | | 9 |
| 682471L SAMPLER | 1 | lanınz Iyroh | a_/ | Kiyo / | c_Residen | 1154 | | 100 | · / | , sin | /- | $\sqrt{}$ | / / | / , | /// | |
| | MI | | 12 | 1/2 | ·, | | | ` | `/ <u>.</u> 8 | ς '`_/. | | , 3 | | | | 1 |
| STÅ NO. | DATE | TIME | COMP. | GRAB | | STAT | ION LOCATION | | Hirton of | \$\hat{S}_{1} | 169 | | | | REMARKS | |
| 40504-02 | छो।नैवर | 14,0° | X | _ | New Rich | mond AB | ISA#11 Juyanile Sm Onss | | | x_ / x | | | | | Combine Killiant ca with Kilosot-CI (parilled e | rapu) |
| 40530-6 | _ _ | | _ _ | | | _ | | \ | \ | [- - | | | | | Process all Judenile bis composite samples as | |
| 40531-C | | | \square | | <u> </u> | _ | | | | | _ | | | | Whole but composites and any ze tolking a | inalytic |
| 40532-C | لل | <u></u> | 1 | | | | | | | - - | _ | - | | - 1 | Placedom characted previously | |
| 40533-C | 19/11/द्धा | 14,0 | x | _ | Luke Mega | a_ABS/ | #9 Juvenile Sm Bus | | | | _ | . | | | | |
| 40234-61 | n | Þ | <u> "</u> | | | | | <u> </u> | - 4 | | _ _ | _ | | _{1 | Retain C-1 to combine with 40334 C. a which w | ப் மிந்த |
| | विगादर | 10,10 | | X | Lala Allog | 190/165/ | Alta Adult Gop | 1 | | د ۲ | / | | | | Fillet corpi(skin-off fillels) and base (sl | |
| K40536 | | _1_ | | |] | <u>,</u> _ | | | | _ _ \ | | _ | | | -scales - on libils) and only se tillels tallon | |
| K40537 | | | | | <u> </u> | _ | | | | _ _ | | | | | analytical promotions discussed previously | • |
| K40538 | _ | | | | | | | | | | | | | | | |
| 1540537 | | | | | | J | | | | | | | | | | |
| 1540540 | | _ _ | | | 1.16 11/2 | a Msa | #9 Adult Bass | | // | | | | | | | . |
| K40241 | | | | $\ \ ^-$ | 1 String | I | | | | | | | | | | |
| 1 1 | | | | | | | | 1 | | | _ | | | _ | - de | |
| K40542 Relinquish | ed by: (S | ignature | } | l | DATE | TIME | Received by: (Signature) | J <u>-</u> | Rollno | Julsho | d bŷ: | (Signa | turo) | ·I | DATE TIME Rollinguished by: (Signature) | |
| Kell |) \$7. | · A | | | DATE | 16:30 | | | - Faller | | 3 E | Ciona | lual | | DATE HMF Rollinguished by: (Signature) | |
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| Relinquish | ed by: (S | Signature |) | | DATE | TIME | Rocelved for Laboratory by: (Signature) | | | DATE | | | 7 | ME - | Remarks | |
| | | | | | | | Milan Me | hor | 101 | 18/ | 11_ | | 1/1 | 15 | DENT ORIGINAL ON THE | , |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH04

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:



Blasiand, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH04 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses Analyses were performed on the following samples:

| | | | | | Analyses | | | | |
|-----------|--------|--------|------------------|-----|----------|-----|-----|--------|--|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %LIPID | |
| K40573 | 345521 | tissue | 10/21/97 | | | x | | x | |
| K40574 | 345522 | tissue | 10/21/97 | | | x | | x | |
| K40551-C | 345523 | tissue | 10/20/97 | | | x | | x | |
| K40564-C | 345524 | tissue | 10/21/97 | | | x | | x | |
| K40565-C | 345525 | tissue | 10/21/97 | | | х | | x | |
| K40566-C | 345526 | tissue | 10/21/97 | | | x | | x | |
| K40567-C | 345527 | tissue | 10/21/97 | | | x | | x | |
| K40558 | 345528 | tissue | 10/20/97 | | | x | | × | |
| K40559 | 345529 | tissue | 10/20/97 | | | X | | × | |
| K40560 | 345530 | tissue | 10/20/97 | | | x | | x | |
| K40561 | 345531 | tissue | 10/20/97 | | | × | | x | |
| K40562 | 345532 | tissue | 10/20/97 | | | × | | × | |
| K40563 | 345533 | tissue | 10/20/97 | | | x | | × | |
| K40575 | 345534 | tissue | 10/21/97 | | | x | | x | |
| K40576 | 345535 | tissue | 10/21/97 | | | × | | × | |
| K40577 | 345536 | tissue | 10/21/97 | | | x | | x | |
| K40578 | 345537 | tissue | 10/21/97 | | | x | | x | |
| K40579 | 345538 | tissue | 10/21/97 | | | x | | x | |
| K40580 | 345539 | tissue | 10/21/97 | | | х | | x | |
| K40582 | 345540 | tissue | 10/21/97 | | | x | | x | |
| | | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

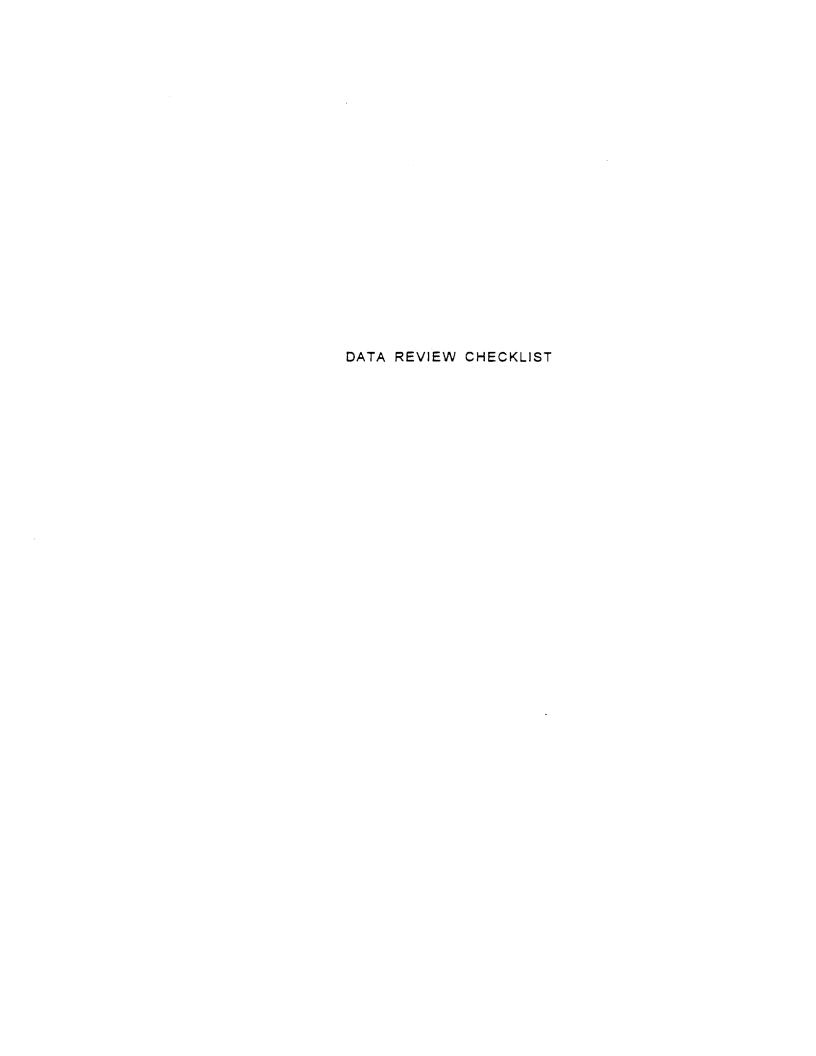
The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.



PCB Data Review Checklist

| | YES | NO | NA |
|--|----------|----------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | <u> </u> | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u>X</u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | x | <u></u> | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| out of | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| out of | | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | x |

PCB Data Review Checklist - Page 3

| | YES_ | NO | NA_ |
|--|----------|----|------|
| Was GC/MS confirmation provided when required? | | · | X |
| Compound Quantitation and Reported Detection Limits | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | x | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | ···· |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surro | gates |
|-----------|--------------|---------------------------------------|---|
| | | TCX | DCB |
| K40573 | | | |
| K40574 | | | |
| K40551-C | | | · |
| K40564-C | | | |
| K40565-C | | | - · · · · · · · · · · · · · · · · · · · |
| K40566-C | | | - |
| K40567-C | | | <u> </u> |
| K40558 | | | |
| K40559 | | | |
| K40560 | | | |
| K40561 | | | |
| K40562 | | | ~ |
| K40563 | | · · · · · · · · · · · · · · · · · · · | |
| K40575 | | | |
| K40576 | | | |
| K40577 | | | |
| K40578 | | | |
| K40579 | | | |
| K40580 | | | |
| K40582 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high

Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u>
Column: RTX-35 / RTX-5

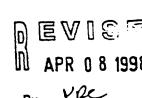
| Date: | 3/04/98- | 3/05/98 | 3/05/98 | 3/05 | 3/05 | 3/05 | 3/06 | 3.0€ |
|----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|
| Time: | 3/05/98 | 0927 | 0953 | 1505 | 1531 | 2017 | 0104 | 0:30 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont Cal |
| | %RSD | %D | % D | %D | %D | %D | %D | % € |
| Arocior 1016 | ok | | | | | | | |
| Arociar 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | ok | | | ļ |
| Arocior 1248 | ak | ok | · | ok | ļ <u></u> | | ok | ļ |
| Arocior 1254 | ok | | | | | ok | | |
| Aroclor 1260 | ok | ļ | ok | <u></u> | | | | ok |
| Tetrachioro-m-xylene | ok | | | | | | <u> </u> | ļ |
| Decachlorobiphenyl | ok | | | | <u> </u> | | <u> </u> | |
| Affected Samples: | | | | | | | | <u> </u> |
| | | | | | | | <u> </u> | |
| | | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

EPA SAMPLE NO.

| | | | | | K40574 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345522 | |
| Phase Weight: | 10.3 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 xle 418198 | _ | Sulfur Clean-up: | Y | (Y/N) |

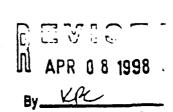
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|----------------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Arocior-1221 | 49 | U |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Arocior-1248 | 130 | i |
| 11097-69-1 | Aroclor-1254 | 230 | - |
| 11096-82-5 | Arocior-1260 | 53 | |



00001

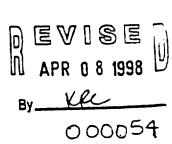
| | | | | к | 40564-C |
|------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | РСВ | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345524 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| ijection Volume: | 1.0 | (uL) | Date Extracted: | 02/26/98 | |
| Dilution Factor: | 5.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 XEL 418198 | • | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 250 | U |
| 11104-28-2 | Aroclor-1221 | 250 | u |
| 11141-16-5 | Arocior-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Arocior-1248 | 950 | |
| 11097-69-1 | Arocior-1254 | 640 | |
| 11096-82-5 | Araclar-1260 | 220 | J |



| | | | | K | 40566-C |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | ВІОТА | | Lab Sample ID: | 345526 | |
| Phase Weight: | 10.1 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/26/98 | |
| Dilution Factor: | 3.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 LPC 415198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | Ú |
| 11141-16-5 | Arocior-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | U |
| 12672-29-6 | Aroctor-1248 | 670 | |
| 11097-69-1 | Aroclor-1254 | 660 | 1 |
| 11096-82-5 | Arocior-1260 | 170 | |

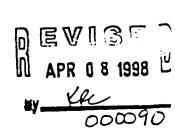


| | | | | | | K40558 | 1 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | <u></u> | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345528 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 02/26/98 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 03/05/98 | | |
| % Solids: | 185 xec 4/8/48 | | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Aroctor-1242 | 50 | U |
| 12672-29-6 | Arocior-1248 | 50 | Ü |
| 11097-69-1 | Arocior-1254 | 72 | į |
| 11096-82-5 | Aroclor-1260 | 50 | U |

| | | | | | K40560 |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345530 | _ |
| Phase Weight: | 10.2 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 xec 4/8/98 | 1 | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Aracior-1221 | 49 | Ū |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Aracior-1248 | 49 | Ŭ |
| 11097-69-1 | Arocior-1254 | 78 | |
| 11096-82-5 | Arocior-1260 | 49 | U |

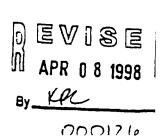


| | | | | · · | | K40562 | | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|---|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | L | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH04 | | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345532 | | | |
| Phase Weight: | 10.1 | (g) | | Date Received: | 10/23/97 | | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | | _ | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 03/05/98 | | _ | |
| % Solids: | 100 yec 418/98 | • | | Sulfur Clean-up: | Y | | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Aroctor-1232 | 50 | U |
| 53469-21-9 | Aroctor-1242 | 50 | u |
| 12672-29-6 | Aroctor-1248 | 50 | U |
| 11097-69-1 | Arocior-1254 | 44 | J |
| 11096-82-5 | Arocior-1260 | 50 | Ü |

| | | | | 1 | K40575 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345534 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 3.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KRC 418199 | · } | Sulfur Clean-up: | Y | (Y/N) |

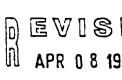
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | |
|------------|--------------|-----------------------|---|
| 12674-11-2 | Aroclor-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Aroclor-1232 | 150 | U |
| 53469-21-9 | Arocior-1242 | 150 | U |
| 12672-29-6 | Arocior-1248 | 150 | U |
| 11097-69-1 | Arocior-1254 | 230 | |
| 11096-82-5 | Aroclor-1260 | 150 | U |



EPA SAMPLE NO.

| | | | | | K40577 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345536 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KR 418/91 | <u> </u> | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 140 | |
| 11097-69-1 | Arocior-1254 | 150 | |
| 11096-82-5 | Aroclor-1260 | 31 | J |



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| | | | | 1 | K40579 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345538 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KR 418198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | Ū |
| 11104-28-2 | Arocior-1221 | 50 | Ü |
| 11141-16-5 | Aracior-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Arocior-1248 | 98 | |
| 11097-69-1 | Aracior-1254 | 170 | |
| 11096-82-5 | Aroctor-1260 | 33 | J |

EPA SAMPLE NO.

| | | | | | | K40581 | |
|-------------------|-------------------|------|----------|------------------|----------|--------|-----|
| Lab Name: | ITS Environmental | _ | ab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345540 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 03/05/98 | | |
| % Solids: | 100 KRC 418198 | | | Sulfur Clean-up: | Y | | /N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | . 50 | U |
| 53469-21-9 | Arocior-1242 | 50 | U |
| 12672-29-6 | Arocior-1248 | 150 | |
| 11097-69-1 | Arocior-1254 | 160 | |
| 11096-82-5 | Aracior-1260 | 50 | U |

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| | | | | K40 | 581MSD |
|-------------------|-------------------|-----------|------------------|-----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| . Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345540 MD | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 10.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KPC 418198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------|
| 12674-11-2 | Aroclor-1016 | 500 | , U |
| 11104-28-2 | Arocior-1221 | 500 | U |
| 11141-16-5 | Araclor-1232 | 500 | U |
| 53469-21-9 | Arocior-1242 | 5400 | |
| 12672-29-6 | Aroclor-1248 | 500 | Ü |
| 11097-69-1 | Aroclor-1254 | 5500 | |
| 11096-82-5 | Aroclor-1260 | 500 | U |



Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|-------------|
| K40574 | 345522 | tissue | ≎ 3% |
| K40551-C | 345523 | tissue | 1.5% |
| K40564-C | 345524 | tissue | 2.4% |
| K40565-C | 345525 | tissue | 2.9% |
| K40566-C | 345526 | tissue | 2 2% |
| K40567-C | 345527 | tissue | 3.2% |
| K40558 | 345528 | tissue | 0.6% |
| K40559 | 345529 | tissue | 0.2% |
| K40560 | 345530 | tissue | 0 4% |
| K40561 | 345531 | tissue | <u>C 3%</u> |
| K40562 | 345532 | tissue | 0 4% |
| K40563 | 345533 | tissue | 0 3% |
| K40575 | 345534 | tissue | 0.5% |
| K40576 | 345535 | tissue | 0.6% |
| K40577 | 345536 | tissue | 0.4% |
| K40578 | 345537 | tissue | 0.7% |
| K40579 | 345538 | tissue | 0.3% |
| K40580 | 345539 | tissue | 0.4% |
| K40582 | 345540 | tissue | 0.4% |
| | | | |
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| | | | |

CHAIN OF CUSTODY



8723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-3066 TÉL: (315) 446-9120

CODY ORIGINAL ON FILE COOK FISHO3 FOR \$ 67086

CHAIN OF CUSTODY RECORD

000004 PROJ. NO. PROJECT NAME Kalamazon River NRIMP Resident Fish 64521711 **BAMPLERS: (Signature)** STA. NO. DATE TIME STATION LOCATION REMARKS Fillet (SKIn-off Fillets) and analyze following analytical Proceedings discussed proviously K40214 192141 14:0 X Intle Alleynn - Corp. K40567 K40570 K40571 154052 KYOSIZ K40574 Relinquished by: (Signature) DATE TIME |Relinquished by: (Signature) TIME Received by: (Signature) Relinguished by: (Signature) DATE 10/3-4(7) 11:45
DATE TIME Received by: (Signature) TIME Relinquished by: (Signature) DATE Relinguished by: (Signature) TIME Remarks: TIME Received for Laboratory by: Relinguished by: (Signature) DATE 0930 10-23-97



6723 Towpath Road, P.O Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

| PROJ. NO. 선명교식 기미 SAMPLER | | CT NAV | _Kry | 100 | NRMF TV | Kesul | ant 1.64 | | 7.7 | S. S. S. S. S. S. S. S. S. S. S. S. S. S | A COS | o res | | , y | 7/ | | | 7 | | • | | | | (| 90000 |
|---------------------------------|-----------|-----------|-------|------|------------|-------|--|-----------|-----|--|------------|-------|---|--------|-----|-------------------|-----|-------------|----------------|---------|-------------|-----|-------|-------|-------|
| STA NO. | DATE | TIME | COMP. | GRAB | | STAT | ION LOCATION | | | No. | | 6183 | 3 | x / | // | // | | , | | | REMARKS | | | | Q |
| K40513 K40581 K40581 | 11/4/91 | 12:50 | | X | Like All | lyer | sm Bass | | | | <i>X</i> + | X | | | | | Jul | <u>1115</u> | Salen Analy | hel | funde | ues | doces | u. f. | 11.6 |
| Relinquish | 1 × | for. | | | DATE | | Received by: (Signa Received by: (Signa | | | | nqula | | • | - | | | • | DATE | | | linguis hed | | | | |
| Relinguish | ed by: (S | ignelure) | | | DATE | TIME | Received for Labora (Signature) | itory by: | • | 10 | DA -23 | |) | (| 193 | ime 3 <i>0</i> | | Rems | orks: | | | | | | |

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH05

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH05 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses Analyses were performed on the following samples:

| 1 | | | | Analyses | | | | | | | |
|-----------|---------|--------|------------------|----------|-----|-----|-----|--------|--|--|--|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %[P D | | | |
| K40584 | 345983 | tissue | 10/23/97 | | | х | | x | | | |
| K40585 | 345984 | tissue | 10/23/97 | | | x | | x | | | |
| K40585 | 345985 | tissue | 10/23/97 | | | x | | × | | | |
| K40587 | 345986 | tissue | 10/23/97 | | | χ. | | × | | | |
| K40595 | 345987 | tissue | 10/23/97 | | | x | | x | | | |
| K40586 | 345988 | tissue | 10/23/97 | <u> </u> | | x | | x | | | |
| K40589 | 345989 | tissue | 10/23/97 | | | x | | × | | | |
| K40590 | 345990 | tissue | 10/23/97 | | | x | | x | | | |
| K40591 | 345991 | tissue | 10/23/97 | | | x | | × | | | |
| K40592 | 345992 | tissue | 10/23/97 | | | x | | × | | | |
| K40593 | 345993 | tissue | 10/23/97 | | | x | | × | | | |
| K40594 | 345994 | tissue | 10/230/97 | | | × | | x | | | |
| K40505 | 345995_ | tissue | 10/14/97 | | | × | | × | | | |
| K40596 | 345996 | tissue | 10/14/97 | | | × | | × | | | |
| K40597 | 345997 | tissue | 10/14/97 | | | x | | x | | | |
| K40598 | 345998 | tissue | 10/14/97 | | | x | | × | | | |
| K40599 | 345999 | tissue | 10-14/97 | | | × | | x | | | |
| K40600 | 346000 | tissue | 10/14/97 | | | x | | x | | | |
| K40601 | 346001 | tissue | 10/14/97 | | | x | | x | | | |
| K60202 | 346002 | tissue | 10/14/97 | | | x | | х | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40506, K40512 and K40515. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. Recovery for both surrogates were above control limits in the extraction blank. Since surrogate recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation. Surrogates were diluted beyond the range of detection in sample K40509. No data has been qualified based on diluted surrogates.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | <u>NA</u> |
|--|-------------|-------------|--|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | ······································ |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | | X | |
| Were matrix spikes analyzed at the required frequency? | | X | |
| How many spike recoveries were outside of QC limits? | | | |
| NA out of NA | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| NA_ out of NA_ | | | |
| Blanks | | | |
| Is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | x | |
| Do any field/rinse blanks have positive results? | | | × |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |

PCB Data Review Checklist - Page 2

| | YES | NO | NA_ |
|---|-----------|-------------|-------------|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u> </u> | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | <u> x</u> | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | x | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | <u>X</u> | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | x | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | x | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | x | | |
| Were there any false negatives? | | X | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA. |
|--|----------|----|-------------|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limit | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | - | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surre | ogates |
|-----------|--------------|---------------------------------------|--------|
| | | TCX | DCB |
| K40500 | +5 | | |
| K40502 | +5 | | |
| K40503C | +5 | | |
| K40506 | +5 | | |
| K40507 | +5 | | |
| K40508K | +5 | · | |
| K40509 | +5 | D | С |
| K40511 | +5 | | |
| K40512 | +5 | . | |
| K40513 | +5 | | |
| K40514 | +5 | | |
| K40515 | +5 | i | |
| K40516 | +5 | | |
| K40504-C1 | +5 | | |
| K40504-C2 | +5 | · · · · · · · · · · · · · · · · · · · | |
| K40504-C | +5 | | |
| K40517-C | +10 | | |
| K40518-C | +10 | | |
| K40519-C | +10 | | |
| K40520-C | +10 | | |
| | | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out Recovery high

Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 1/28/98- | 1/30/98 | 1/30/98 | 1/31 | 1/31 | 1/31 | 1/31 | 1/31 |
|----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|--------------|-------------|
| Time: | 1/29/98 | 2118 | 2145 | 2156 | 0337 | 0902 | 0929 | :30 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Ca: | Cont Cal |
| | %RSD | %D | %D | %D | % D | %D | %D | % D |
| Aroctor 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Aroclor 1232 | ok | | | · | | | | ļ |
| Aroclor 1242 | ok | | ok | | | ļ | | |
| Arocior 1248 | ok | ok | | ok | | ok | | ok |
| Arocior 1254 | ok | | | | ok | | | ļ |
| Aroclor 1260 | ok | | | <u> </u> | | ļ | ok | |
| Tetrachioro-m-xytene | ok | | | | | ļ | | |
| Decachlorobiohenyl | ok | | | | | | | ļ |
| Affected Samples: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | <u> </u> |
| | | | | | | | <u> </u> | |
| | | <u> </u> | | | | <u> </u> | <u> </u> | <u> </u> |
| | | | | <u> </u> | | <u> </u> | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date: | 1/28/98- | 1/31/98 | | | | | | |
|----------------------|-----------------|---------------|----------------|---------------|---------------|--------------|--------------|----------|
| Time: | 1/29/98 | 1334 | | | | | | |
| | Initia! Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal | Cont. |
| | %RSD | %D | %D | %D | %D | %D | %D | %0 |
| Arocior 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Arocior 1242 | ok | ok | | | | | | |
| Arocior 1248 | ok | | | | | | - | |
| Arocior 1254 | ok | | | | | | | <u> </u> |
| Arocior 1260 | ok | | | | | | | |
| Tetracnioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | - " | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| 2/04/98- | 2/05/98 | 2/05/98 | | | | | |
|-----------------|---|--|--|---------------|--------------|--------------|-------------|
| 2/05/98 | 1308 | 1335 | | | | | |
| Initial Cal. | Cont. Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal | Cont Cal |
| %RSD | % D | % D | %D | % D | %D | %D | % C |
| ok | | | | | | | |
| ok | | | | | | | |
| ok | | | | | | | <u> </u> |
| ok | | ok | | | | | |
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| ok | | | | | <u> </u> | | <u> </u> |
| ak | | | | | | | |
| ok | | | | | | | |
| | | | | | | | |
| | 2/05/98 Initial Cal. %RSD ok ok ok ok ok ok | 2/05/98 1308 Initial Cont. Cal. Cal. %RSD %D ok ok ok ok ok ok ok ok ok ok ok ok | 2/05/98 1308 1335 Initial Cont. Cont. Cal. Cal. Cal. %RSD %D %D ok ok ok ok ok ok ok ok ok o | 2/05/98 | 2/05/98 | 2/05/98 | 1308 1335 |

| _ | ok | | | | |
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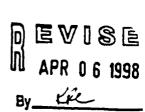
CORRECTED ANALYSIS SUMMARY FORMS

| | | | | K40500 | | |
|-------------------|-------------------|-----------|------------------|----------|--------|--|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345205 | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | | Date Analyzed: | 01/31/98 | | |
| % Solids: | Jack Lax | - - | Sulfur Clean-up: | Υ | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 100 | 1 UZ | |
| 11104-28-2 | Aroclor-1221 | 100 | R W | |
| 11141-16-5 | Aroclor-1232 | 100 | W 113 | |
| 53469-21-9 | Arocior-1242 | 100 | The rest | |
| 12672-29-6 | Arocior-1248 | 330 | 2 | |
| 11097-69-1 | Arocior-1254 | 450 | 7 | |
| 11096-82-5 | Aroclor-1260 | 94 | J | |

| | | | | | | K40502 | |
|------------------|-------------------|------|-----------|------------------|------------|--------|-------|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345207 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 0 1/3 1/98 | | |
| % Solids: | 100,48 | - | | Sulfur Clean-up: | Y | | (Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | W W |
| 11104-28-2 | Arocior-1221 | 50 | # 1/2 · |
| 11141-16-5 | Aroclor-1232 | 50 | Tw W |
| 53469-21-9 | Aroclor-1242 | 50 | Ψ ~ |
| 12672-29-6 | Aroclor-1248 | 290 | |
| 11097-69-1 | Aroclor-1254 | 330 | 7 |
| 11096-82-5 | Arocior-1260 | 59 | 7 |



| | | | | | K40503C | | |
|-------------------|-------------------|-----------|------------------|----------|---------|--|--|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH01 | | |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345208 | | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | | | |
| injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | | | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 01/31/98 | | | |
| % Solids: | JEGGE MICH | _ | Sulfur Clean-up: | Y | (Y/N) | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 100 | h 112 |
| 11104-28-2 | Arocior-1221 | 100 | EN A |
| 11141-16-5 | Arocior-1232 | 100 | Tw W |
| 53469-21-9 | Aroclor-1242 | 100 | Th M |
| 12672-29-6 | Arocior-1248 | 100 | Ly 8 |
| 11097-69-1 | Arocior-1254 | 1000 | 7 |
| 11096-82-5 | Aroclor-1260 | 97 | J |

| | | | | | K40506 |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345209 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 10.0 | | Date Analyzed: | 01/31/98 | |
| % Solids: | JOGN CIX | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | W (4) |
| 11104-28-2 | Aroclor-1221 | 500 | n n |
| 11141-16-5 | Aroclor-1232 | 500 | 4 45 |
| 53469-21-9 | Aroclor-1242 | 500 | R, 2 |
| 12672-29-6 | Aroctor-1248 | 500 | 7 7 |
| 11097-69-1 | Aroclor-1254 | 3200 | 2 |
| 11096-82-5 | Aroclor-1260 | 290 | J |

| | | | | | • | K40507 | |
|-------------------|-------------------|-------------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | į | | |
| Contract: | 91082 | | Case: | PC8 | SDG: | FISH01 | - |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345210 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 100 AY | _ | | Sulfur Clean-up: | Υ | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 100 | # 172 |
| 11104-28-2 | Araciar-1221 | 100 | - W W |
| 11141-16-5 | Arocior-1232 | 100 | 1 8 m |
| 53469-21-9 | Arocior-1242 | 100 | EN BY |
| 12672-29-6 | Arocior-1248 | 470 | 7 |
| 11097-59-1 | Arocior-1254 | 630 | 7 |
| 11096-82-5 | Aroctor-1260 | 180 | 7 |

| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | K40508 | | |
|-------------------|-------------------|----------|-----------|------------------|----------|---------------------------------------|-------------|
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345211 | · · · · · · · · · · · · · · · · · · · | |
| Phase Weight: | 10.0 | - (g) | | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | _ |
| Dilution Factor: | 10.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 106,00 | | | Sulfur Clean-up: | Y | | (Y/N) |
| | A/O | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 500 | 4 4 | |
| 11104-28-2 | Arocior-1221 | 500 | 4 47 | |
| 11141-16-5 | Arocior-1232 | 500 | 72 4 | |
| 53469-21-9 | Arocior-1242 | 500 | R / - | |
| 12672-29-6 | Aroctor-1248 | 500 | T) | |
| 11097-69-1 | Arocior-1254 | 4900 | 7 | |
| 11096-82-5 | Arocior-1260 | 1000 | 7 | |

| | | | | | | K40509 |
|-------------------|-------------------|------|-----------|------------------|------------|--------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | РСВ | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345212 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 20.0 | _ | | Date Analyzed: | 0 1/3 1/98 | |
| % Solids: | Jet per 10 % | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 1000 | W # 150 | |
| 11104-28-2 | Arocior-1221 | 1000 | A M | |
| 11141-16-5 | Aroclor-1232 | 1000 | A C | |
| 53469-21-9 | Arocior-1242 | 3000 | 7 | |
| 12672-29-6 | Arocior-1248 | 1000 | # UT | |
| 11097-69-1 | Aroclor-1254 | 13000 | 7 | |
| 11096-82-5 | Aroctor-1260 | 1300 | 7 | |

| | | | | | | K40511 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345214 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 200/12/as | _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 250 | R M | |
| 11104-28-2 | Aroclor-1221 | 250 | 1 W W | |
| 11141-16-5 | Arocior-1232 | 250 | R 00 | |
| 53469-21-9 | Arocior-1242 | 250 | 8 - | |
| 12672-29-6 | Arocior-1248 | 1100 | <u> </u> | |
| 11097-69-1 | Aroclor-1254 | 1500 | 7. | |
| 11096-82-5 | Arocior-1260 | 340 | 7 | |

| | | | | i. | K40512 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCS | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345215 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 10.0 | _ | Date Analyzed: | 01/31/98 | |
| % Solids: | 208 pt. 108 | <u>-</u> | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 500 | 4 47 | |
| 11104-28-2 | Araclor-1221 | 500 | R 12 | |
| 11141-16-5 | Aroclor-1232 | 500 | 1 W W | |
| 53469-21-9 | Aroctor-1242 | 500 | U 197 | |
| 12672-29-6 | Aroclor-1248 | 500 | T. 4 | |
| 11097-69-1 | Arocior-1254 | 5200 | 1 . 5 | |
| 11096-82-5 | Arocior-1260 | 810 | 7 | |

| | | | | | | K40513 | |
|------------------|-------------------|----------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | РСВ | SDG: | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345216 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 100 th all | _ _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|-----|
| 12674-11-2 | Aroclor-1016 | 50 | U | U37 |
| 11104-28-2 | Aroclor-1221 | 50 | 4 | 2 |
| 11141-16-5 | Aroclor-1232 | 50 | R | 77 |
| 53469-21-9 | Aroctor-1242 | 50 | ע | 127 |
| 12672-29-6 | Aroctor-1248 | 330 | | 7. |
| 11097-69-1 | Arocior-1254 | 310 | | 715 |
| 11096-82-5 | Aroctor-1260 | 80 | | 7 |

EPA SAMPLE NO.

| | | | | Ì | K40514 |
|-------------------|-------------------|-----------|------------------|------------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | <u> </u> | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345217 | |
| Phase Weight: | 10.0 | _ (g) | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 0 1/3 1/98 | |
| % Solids: | Jegu as | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | DJ R | |
| 11104-28-2 | Araciar-1221 | 50 | L7 A | |
| 11141-16-5 | Aroctor-1232 | 50 | W 12 | |
| 53469-21-9 | Arocior-1242 | 50 | # W | |
| 12672-29-6 | Aroclor-1248 | 530 | 7 | |
| 11097-69-1 | Aroclor-1254 | 370 | 6 | |
| 11096-82-5 | Aroclor-1260 | 71 | 7 | |

By KRC

| | | | | K40515 |
|-------------------|---------------------------------------|--|--|--|
| ITS Environmental | Lab Code: | INCHVT | | |
| 91082 | Case: | РСВ | SDG: | FISH01 |
| BIOTA | _ | Lab Sample ID: | 345218 | |
| 10.0 | (g) | Date Received: | 10/16/97 | |
| 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| 10.0 | _ | Date Analyzed: | 01/31/98 | |
| 100/th ins | - | Sulfur Clean-up: | Y | (Y/N) |
| | 91082 BIOTA 10.0 1.0 10.0 | 91082 Case: BIOTA 10.0 (g) 1.0 (uL) 10.0 | BIOTA Lab Sample ID: 10.0 (g) Date Received: 1.0 (uL) Date Extracted: 10.0 Date Analyzed: 100 Sulfur Clean-up: | ITS Environmental Lab Code: INCHVT |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 500 | R VI | |
| 11104-28-2 | Aroclor-1221 | 500 | 4 10 | |
| 11141-16-5 | Aroclor-1232 | 500 | y 10 | |
| 53469-21-9 | Aroctor-1242 | 500 | لا | |
| 12672-29-6 | Aroctor-1248 | 1500 | | |
| 11097-69-1 | Aroctor-1254 | 2100 | 7 | |
| 11096-82-5 | Aroctor-1260 | 560 | | |

| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | K40516 |
|-------------------|-------------------|-------------------|-----------|------------------|----------|-------------|
| Contract: | 91082 | - - | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345219 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 per 108 | _ | | Sulfur Clean-up: | Y | (Y/N) |

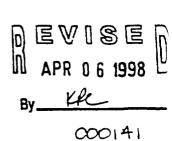
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 250 | 410 | |
| 11104-28-2 | Arocior-1221 | 250 | # W | |
| 11141-16-5 | Arocior-1232 | 250 | 1 47 UV | |
| 53469-21-9 | Arocior-1242 | 250 | W 45 | |
| 12672-29-6 | Arocior-1248 | 250 | N 14 | |
| 11097-69-1 | Arocior-1254 | 2000 | 1 5 | |
| 11096-82-5 | Arocior-1260 | 350 | 7 | |

| | | | | _ | H | (40504-C |
|------------------|-------------------|------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | <u></u> | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345420 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 44,148 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 150 | Th. (10) | |
| 11104-28-2 | Aroclor-1221 | 150 | 1 1 | |
| 11141-16-5 | Aracior-1232 | 150 | R | |
| 53469-21-9 | Aroclor-1242 | 150 | 8 m | |
| 12672-29-6 | Arocior-1248 | 590 | = | |
| 11097-69-1 | Arocior-1254 | 700 | 7 | |
| 11096-82-5 | Aroclor-1260 | 150 | 7 | |

| | | | | | H | (40517-C |
|------------------|-------------------|------|-----------|------------------|----------|----------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345421 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | |
| % Solids: | 195 ye , as | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-------------|
| 12674-11-2 | Arocior-1016 | 50 | 44 V. |
| 11104-28-2 | Arocior-1221 | 50 | 14 Ly |
| 11141-16-5 | Aroclor-1232 | 50 | J 4 |
| 53469-21-9 | Arocior-1242 | 50 | <u>ب</u> بر |
| 12672-29-6 | Arocior-1248 | 50 | 1 4 |
| 11097-69-1 | Arocior-1254 | 200 | |
| 11096-82-5 | Aroclor-1260 | 39 | J |

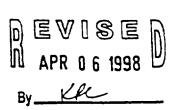


| | | • | | | • | (40518-C | |
|------------------|-------------------|------|-----------|------------------|----------|----------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | _ |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345422 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | · | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | | |
| % Solids: | 100/01/418 | _ | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | D) W |
| 11104-28-2 | Aroclor-1221 | 50 | N M |
| 11141-16-5 | Arocior-1232 | 50 | 4 W |
| 53469-21-9 | Arocior-1242 | 50 | ٦, لا |
| 12672-29-6 | Aroctor-1248 | 50 | |
| 11097-69-1 | Arocior-1254 | 310 | 7 |
| 11096-82-5 | Aroctor-1260 | 58 | 77 |

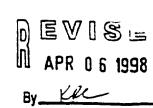
| | | | | K | 40519-C |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345423 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/05/98 | |
| % Solids: | 20001108 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | ₹ |
|------------|--------------|-----------------------|-----------|--------------|
| 12674-11-2 | Araclor-1016 | 50 | 1 18 | <u>~</u> |
| 11104-28-2 | Aroctor-1221 | 50 | H. | W |
| 11141-16-5 | Arocior-1232 | 50 | ע | 47 |
| 53469-21-9 | Aroclor-1242 | 50 | 1 1 | W |
| 12672-29-6 | Aroclor-1248 | 50 | U | w |
| 11097-69-1 | Arocior-1254 | 230 | | 7 |
| 11096-82-5 | Arocior-1260 | 43 | <u> </u> | |



| | | | | | • | (40520-C | |
|------------------|-------------------|------|-----------|------------------|----------|----------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345424 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | | |
| % Solids: | 100,44,10,98 | _ | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | The UT |
| 11104-28-2 | Arocior-1221 | 50 | W 15 |
| 11141-16-5 | Aroclor-1232 | 50 | The M.J. |
| 53469-21-9 | Aroclor-1242 | 50 | 1 |
| 12672-29-6 | Arocior-1248 | 50 | 4 |
| 11097-69-1 | Arocior-1254 | 210 | 7 |
| 11096-82-5 | Aroclor-1260 | 36 | J |



PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab 1D | Matrix | Result |
|-----------|--------|--------|--------|
| K40500 | 345205 | tissue | 0.5% |
| K40502 | 345207 | tissue | C 6% |
| K40503C | 345208 | tissue | 1.0% |
| K40506 | 345209 | tissue | 16.7% |
| K40507 | 345210 | tissue | 2 1% |
| K40508K | 345211 | tissue | 3 6% |
| K40509 | 345212 | tissue | 10 3% |
| K40511 | 345214 | tissue | 4.2% |
| K40512 | 345215 | tissue | 3.5% |
| K40513 | 345216 | tissue | 5 4% |
| K40514 | 345217 | tissue | 2.8% |
| K40515 | 345218 | tissue | 5.5% |
| K40516 | 345219 | tissue | 1.3% |
| K40504-C | 345420 | tissue | 2.1% |
| K40517-C | 345421 | tissue | 0.4% |
| K40518-C | 345422 | tissue | 0.5% |
| K40519-C | 345423 | tissue | 0.6% |
| K40520-C | 345424 | tissue | 0.6% |
| | | | |
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CHAIN OF CUSTODY

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| AS24711 SAMPLER | | 16.14 | uzó | o R | ive A | osiched | + Fish | | NO | | L | /- | | | | |
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| 40503 | : | | X | | | ·-·· | | | - | - | | _ | | | | Analyze extrale: bush composite es eliverted above |
| 501-C1 | | | X | | | | 1 | | 7 | 1 | | | | | | Retain for combination Wad literal Sarples |
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BLASLAND & BOUCK

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SLASLAND & BOUCK ENGINEERS, P.C.

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6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

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| Relinquish | ied by: / | n'alure |) | | DATE | TIME | Received for Laboratory by: (Signature) | | | D | ĀTĒ | | Τ | Ŧ | ME | | Remarki | : : | 1. | | |
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MASIAND & BOUCK INGINEERS, P.C.

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| SAMPLER | 15: 15:pn | elure) | 1-1- | ~ 1/2 | : Rive- Resident Fish | - | w. | | / 5 | Y. / | | / / | | | |
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| K40522 | | | | | | | | | | | | | n-12 10-15 | d:se | per following includes 1 used personly lets) SM Bus (Skinish, |
| K40523 | | | | | | | | | | _ _ | _ _ | | -44 C 3 Km | affel | lets) SO Bus (Skurm, |
| K40524 | | | | | | 1 | | | | | _ _ | _ _ | Schles-on | Lile | k) |
| K40525 | | } | | | · | | | | | | _ | | | | |
| £40526 | | | | | - 1 | | | | |] | | | | \bot | |
| K40527 | | | | | Macrou Fied Afin #2 Shirts | | | | | | _ | | | | |
| £40528 | | | | | | | 1 | + | | _ | _ - | _ | | | |
| K10529 | <u>Ł</u> | | | <u>大</u> | <u>*</u> | 7 | - | <u> </u> | | | - | _ _ | | Y | |
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| Relinguish | ed by: (| Signature | • | | Date / Time Regarded for Laborato | /h | | . 1 | • /T" | | 1 | ···BFR\$ | | | |
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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH02

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review pe formed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH02 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| 1 | | | | | | Analys | es | |
|-----------|--------|--------|------------------|--|--|--|----------|--------------|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %LIPI |
| K40521 | 345425 | tissue | 10/15/97 | | | x | | x |
| K40522 | 345426 | tissue | 10/15/97 | | | x | | x |
| K40523* | 345427 | tissue | 10/15/97 | | | x | | x |
| K40525 | 345429 | tissue | 10/15/97 | | | x | | x |
| K40526 | 345430 | tissue | 10/15/97 | | | X | | x |
| K40527 | 345431 | tissue | 10/15/97 | | | x | <u> </u> | x |
| K40528 | 345432 | tissue | 10/15/97 | | | x | | × |
| K40529 | 345433 | tissue | 10/15/97 | | | x | | × |
| K40530-C | 345434 | tissue | 10/15/97 | | | x | | x |
| K40531-C | 345435 | tissue | 10/16/97 | <u> </u> | | x | | x |
| K40532-C | 345436 | tissue | 10/16/97 | | | × | | x |
| K40533-C | 345437 | tissue | 10/16/97 | | | × | | X |
| K40535 | 345438 | tissue | 10/17/97 | | ļ., . | x | ļ | x |
| K40536 | 345439 | tissue | 10/17/97 | | | x | | x |
| K40537 | 345440 | tissue | 10/17/97 | | | x | | × |
| K40538 | 345441 | tissue | 10/17/97 | | | x | | x |
| K40539 | 345442 | tissue | 10/17/97 | | | x | | x |
| K40540 | 345443 | tissue | 10/17/97 | | | x | | × |
| | | | | | | | | - |
| | | | | + | | | + | |

MS/MSD performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples except K40523, K40523MS and K402523MSD were analyzed beyond the specified holding time. Based on the deviation, data for all samples except K40523, K40523MS and K40523MSD have been qualified as estimated.

2 Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for both surrogates were above control limits in the extraction blank. Since recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

All matrix spike and matrix spike duplicate recoveries and relative percent differences between recoveries were within control limits. All matrix spike blank recoveries were also within control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA |
|--|----------|-------------|---------------------------------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | <u> </u> | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | X | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | · · · · · · · · · · · · · · · · · · · |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | *********** | X |
| | | | |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------|-------------|-------------|
| Calibration and GC Performance | | | |
| Are the following chromafograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | <u> </u> | | - |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | x | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | X | | |
| Are %D values for all compounds within limits (less than 15%)? | x | **** | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | x | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | x | | |
| Do the combined column and individual column Aroctor identifications agree? | X | | |
| Were there any false negatives? | | X | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA |
|--|----------|----|-------------|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limits | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surre | ogates |
|-----------|--------------|---------------------------------------|--------|
| | | тсх | DCB |
| K40521 | +28 | · · · · · · · · · · · · · · · · · · · | |
| K40522 | +28 | | |
| K40523 | | | |
| K40523MS | | | |
| K40523MSD | | | |
| K40525 | +28 | | |
| K40526 | +28 | | |
| K40527 | +28 | ····· | |
| K40528 | +28 | . | |
| K40529 | +28 | | |
| K40530-C | +28 | · · · · · · · · · · · · · · · · · · · | |
| K40531-C | +28 | | |
| K40532-C | +28 | | |
| K40533-C | +28 | | |
| K40535 | +25 | | |
| K40536 | +25 | | |
| K40537 | +25 | | |
| K40538 | +25 | | |
| K40539 | +25 | | |
| K40540 | +25 | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 2/04/98- | 2/05/98 | 2/05/98 | | | |
|----------------------|-----------------|---------------|---------------|---|------|--------------|
| Time | 2/05/98 | 1308 | 1335 | | _ | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | | | |
| | %RSD | %D | %D_ | | | |
| Aroclor 1016 | ok | | | | | - |
| Arocior 1221 | ok | | | | | |
| Arcelor 1232 | ok | | | | | |
| Aroclor 1242 | ok | | ok | | | - |
| Araciar 1248 | ok | ok | | | | |
| Aroclor 1254 | ok_ | | | | | |
| Arocior 1260 | ok | | | | | |
| Tetrachioro-m-xylene | ok | | | | | |
| Decachlorobiphenyl | ok | | | | | |
| Affected Samples: | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 2/18/98- | 2/19/98 | 2/19/98 | 2/20 | 2/20 | 2/20 | 2/20 | 2/20 |
|----------------------|-----------------|---------|---------------|---------------|---------------|--|---------------|----------|
| Time: | 2/19/98 | 1957 | 2023 | 0141 | 0207 | 1853 | 1919 | 2251 |
| | Initial Cal. | Cont. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. |
| | %RSD | %D | %D | % D | %D | %D | %D | %0 |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | <u> </u> |
| Aroclor 1232 | ok | | | | | | | <u> </u> |
| Arocior 1242 | ok | | | | | | <u> </u> | <u> </u> |
| Arocior 1248 | ok | Ok_ | | ok | | ok | | ok |
| Arocior 1254 | ok | | ok | | | | | <u> </u> |
| Arocior 1260 | ok | | | | ok | | ok | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachiorobiohenyl | ок | | | | ļ | | | |
| Affected Samples: | | | | | | <u> </u> | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 2/18/98- | 2/20/98 | 2/23/98 | 2/23_ | 2/23 | 2/23 | 2/23 | 2/23 |
|----------------------|-----------------|---------------|---------------|---------------|---------------|--------------|--------------|--------------|
| Time: | 2/19/98 | 2317 | 1202 | 1229 | 1745 | 1812 | 2329 | 2355 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont Cal. | Cont. Cai |
| | %RSD | %D | %D_ | %D | %D | %C | %D | %0 |
| Arociar 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Aroclar 1232 | ok_ | | | | | | | ļ |
| Aroclor 1242 | ok | ok | | | | | | ок |
| Arocior 1248 | ok_ | | ok | | ok | | ok | ļ |
| Araciar 1254 | ok | | | ok | ļ | <u> </u> | | ļ |
| Arcclor 1260 | ok | <u> </u> | | | <u> </u> | ok | ļ | |
| Tetrachioro-m-xylene | ok | | | | | | | ļ |
| Decachlorobiphenyl | ok | | | | | | | <u> </u> |
| Affected Samples: | | | | | | | | |
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| CORRECTED | ANALYSIS | SUMMARY | FORMS |
|-----------|----------|---------|-------|
| | | | |

EPA SAMPLE NO.

| | | | | | | K40521 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | Ĺ | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345425 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100xx 41148 | _ | | Sulfur Clean-up: | Y | C | Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | POUND CONCENTRATION (ug/Kg) | | R |
|------------|--------------|-----------------------------|----|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | A | W |
| 11104-28-2 | Aroclor-1221 | 50 | ध | <u>u3</u> |
| 11141-16-5 | Aroclor-1232 | 50 | J. | Ü |
| 53469-21-9 | Aroctor-1242 | 50 | H. | W |
| 12672-29-6 | Aroclor-1248 | 50 | 足 | TW |
| 11097-69-1 | Arocior-1254 | 28 | J | |
| 11096-82-5 | Aroclor-1260 | 33 | J | |

20001

| | | | | | | K40522 | |
|------------------|-------------------|------|-----------|------------------|----------|-------------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | РСВ | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345426 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100 x 12 4 7 144 | _ | | Sulfur Clean-up: | Y | (Y | (/N) |

| CAS NO. | COMPOUND | COMPOUND CONCENTRATION (ug/Kg) | | R |
|------------|--------------|--------------------------------|-----|--------------|
| 12674-11-2 | Aroclor-1016 | 50 | 1 4 | w |
| 11104-28-2 | Aroclor-1221 | 50 | ਖ | B |
| 11141-16-5 | Aroclor-1232 | 50 | ¥ | w |
| 53469-21-9 | Aroclor-1242 | 50 | Li- | w |
| 12672-29-6 | Aroclor-1248 | 50 | J.H | |
| 11097-69-1 | Aroclor-1254 | 130 | | 7 |
| 11096-82-5 | Aroclor-1260 | 26 | J | |

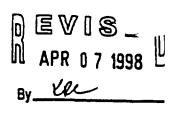
| | | | | | | K40523 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | ВІОТА | _ | | Lab Sample ID: | 345427 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 01/16/98 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/19/98 | | |
| % Solids: | 100 14 Ahlas | _ | | Sulfur Clean-up: | Y | (` | Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 150 | U | |
| 11104-28-2 | Aroclor-1221 | 150 | Ü | |
| 11141-16-5 | Arocior-1232 | 150 | U | |
| 53469-21-9 | Arocior-1242 | 150 | U | |
| 12672-29-6 | Aroctor-1248 | 150 | U | |
| 11097-69-1 | Arocior-1254 | 150 | U | |
| 11096-82-5 | Arocior-1260 | 150 | u | |

EPA SAMPLE NO.

| | | | | | K40525 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | ВІОТА | _ | Lab Sample ID: | 345429 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 108 14 41198 | • | Sulfur Clean-up: | Υ | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | | R |
|------------|--------------|-----------------------|------------|----|
| 12674-11-2 | Aroctor-1016 | 50 | R | W. |
| 11104-28-2 | Arocior-1221 | 50 | र | W |
| 11141-16-5 | Arocior-1232 | 50 | F. | W |
| 53469-21-9 | Arocior-1242 | 50 | R | T. |
| 12672-29-6 | Arocior-1248 | 50 | 4 £ | (|
| 11097-69-1 | Arocior-1254 | 73 | | 7 |
| 11096-82-5 | Aroctor-1260 | 30 | J | |



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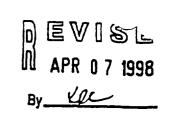
| | | | | | | K40526 |
|------------------|-------------------|----------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | - - | | Lab Sample ID: | 345430 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| jection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 th 44148 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | W 4 W |
| 11104-28-2 | Arocior-1221 | 50 | a & |
| 11141-16-5 | Arocior-1232 | 50 | D # |
| 53469-21-9 | Arocior-1242 | 50 | Q 4 |
| 12672-29-6 | Arocior-1248 | 50 | 5 |
| 11097-69-1 | Aroctor-1254 | 150 | 7 |
| 11096-82-5 | Arocior-1260 | 38 | J |

EPA SAMPLE NO.

| | | | | | | K40527 | | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|--|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | <u> </u> | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345431 | | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | | |
| njection Volume: | 1.0 | (uL) | - | Date Extracted: | 12/17/97 | | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | | |
| % Solids: | 100 th A7196 | _ | | Sulfur Clean-up: | Y | | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|----------|--------------|
| 12674-11-2 | Aroclor-1016 | 50 | <u> </u> | w |
| 11104-28-2 | Aroclor-1221 | 50 | U | a |
| 11141-16-5 | Aroclor-1232 | 50 | R | 2 |
| 53469-21-9 | Aroclor-1242 | 50 | נג | |
| 12672-29-6 | Aroclor-1248 | 50 | R | - |
| 11097-69-1 | Aroclor-1254 | 280 | | <u>2</u> |
| 11096-82-5 | Aroclor-1260 | ಐ | | 7; |



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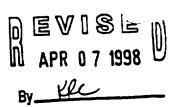
| | | | | - | K40528 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345432 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 VR 41741 | - | Sulfur Clean-up: | Y | (Y/N) |
| | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | * W | |
| 11104-28-2 | Arocior-1221 | 50 | W W | |
| 11141-16-5 | Aroclor-1232 | 50 | 8 12 | |
| 53469-21-9 | Aroclor-1242 | 50 | E VIJ | |
| 12672-29-6 | Arocior-1248 | 50 | EU # | |
| 11097-69-1 | Arocior-1254 | 120 | 7 | |
| 11096-82-5 | Arocior-1260 | 35 | J | |

EPA SAMPLE NO.

| | | | | | K40529 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ Lab Cod | e: INCHVT | | |
| Contract: | 91082 | Cas | e: PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345433 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 4/1/94 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | 8 12 | |
| 11104-28-2 | Arocior-1221 | 50 | 2 | |
| 11141-16-5 | Arocior-1232 | 50 | # 127 | |
| 53469-21-9 | Aroclor-1242 | 50 | B 12 | |
| 12672-29-6 | Aroclor-1248 | 50 | The CD | |
| 11097-69-1 | Arocior-1254 | 110 | 7 | |
| 11096-82-5 | Aroclor-1260 | 50 | · 4 | |



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| | | | | | K | (40530 <i>-</i> C | |
|-------------------|-------------------|------|-----------|------------------|----------|-------------------|--|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | <u> </u> | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | - | | Lab Sample ID: | 345434 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100 KR 4/ 1/98 | • | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|----|
| 12674-11-2 | Aroctor-1016 | 150 | R | 77 |
| 11104-28-2 | Aroclor-1221 | 150 | ₩- | 2 |
| 11141-16-5 | Aroclor-1232 | 150 | ₩ ₩ | w |
| 53469-21-9 | Aroclor-1242 | 150 | l u | W |
| 12672-29-6 | Aroclor-1248 | 480 | | 7 |
| 11097-69-1 | Aroclor-1254 | 640 | | 7 |
| 11096-82-5 | Aroctor-1260 | 150 | 14 | T |

| | | | | к | 40531-C |
|------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 346435 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 KK 41714 8 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|------------|--|
| 12674-11-2 | Arocior-1016 | 150 | 1 | |
| 11104-28-2 | Arocior-1221 | 150 | N W | |
| 11141-16-5 | Aroclor-1232 | 150 | <u>π</u> π | |
| 53469-21-9 | Arocior-1242 | 150 | # W | |
| 12672-29-6 | Arocior-1248 | 560 | | |
| 11097-69-1 | Aroclor-1254 | 600 | 7. | |
| 11096-82-5 | Arocior-1260 | 140 | J | |

| | | | | | H | (40532-C | |
|-------------------|-------------------|------|-----------|------------------|----------|----------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | <u></u> | | |
| Contract: | 91082 | - | Case: | PCB | spg: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345436 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | - | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100 VA 417198 | _ | | Sulfur Clean-up: | Y | ^ | 7/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|--------------|--|
| 12674-11-2 | Arocior-1016 | 150 | 4 4 | |
| 11104-28-2 | Aroclor-1221 | 150 | The Co | |
| 11141-16-5 | Arocior-1232 | 150 | 8 W | |
| 53469-21-9 | Aroclor-1242 | 150 | 4 12 | |
| 12672-29-6 | Aroclor-1248 | 560 | 7 | |
| 11097-69-1 | Aroclor-1254 | 780 | - | |
| 11096-82-5 | Aroclor-1260 | 150 | W CL | |

EPA SAMPLE NO.

| K40533-C | | |
|--|--|--|
| <u>. </u> | | |

ITS Environmental INCHVT Lab Code: Lab Name: 91082 PCB FISH02 Case: SDG: Contract: BIOTA 345437 Phase Type: Lab Sample ID: 10.0 (g) 10/18/97 Phase Weight: Date Received: 1.0 12/17/97 (uL) Date Extracted: Injection Volume: 5.0 02/23/98 Dilution Factor: Date Analyzed: 100 VAL 198 Y (Y/N) % Solids: Sulfur Clean-up:

| CAS NO. | COMPOUND CONCENTRATION (ug/Kg) | | QUALIFIER | |
|------------|--------------------------------|------|-----------|---------------------------|
| 12674-11-2 | Arocior-1016 | 250 | ₩ (J | 3 |
| 11104-28-2 | Aroclor-1221 | 250 | | Z |
| 11141-16-5 | Aroclor-1232 | 250 | 11 | $\overline{\omega}$ |
| 53469-21-9 | Arocior-1242 | 250 | | , 1 |
| 12672-29-6 | Aroclor-1248 | 1500 | | |
| 11097-69-1 | Arocior-1254 | 900 | | $\widetilde{\mathcal{I}}$ |
| 11096-82-5 | Arocior-1260 | 260 | | = |

| | | | | | K40535 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ Case: | PC8 | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345438 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 5.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 100 PK 41148 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|----|
| 12674-11-2 | Arocior-1016 | 250 | t | 43 |
| 11104-28-2 | Arocior-1221 | 250 | 11 | w |
| 11141-16-5 | Arocior-1232 | 250 | ₩. | W |
| 53469-21-9 | Arocior-1242 | 250 | R | Ŵ |
| 12672-29-6 | Aroclor-1248 | 600 | | 7 |
| 11097-69-1 | Aroclor-1254 | 700 | | 7 |
| 11096-82-5 | Aroclor-1260 | 190 | J | |

EPA SAMPLE NO.

| | | | | | (40536 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345439 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 100 VR 44148 | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-------------------|
| 12674-11-2 | Arocior-1016 | 50 | 4 U |
| 11104-28-2 | Arocior-1221 | 50 | 11 (12 |
| 11141-16-5 | Arocior-1232 | 50 | <u>u</u> <u>u</u> |
| 53469-21-9 | Arocior-1242 | 50 | تي لا |
| 12672-29-6 | Arocior-1248 | 120 | |
| 11097-69-1 | Aroclor-1254 | 160 | |
| 11096-82-5 | Arocior-1260 | 76 | |

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| | | | | _ | | K40537 | |
|------------------|-------------------|--------------|-----------|------------------|----------|--------|-----|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PC8 | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345440 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 02/20/98 | | |
| % Solids: | 100 KK 4/1/48 | | | Sulfur Clean-up: | Y | (Y/ | /N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 100 | TA W |
| 11104-28-2 | Arocior-1221 | 100 | 1 4 UJ |
| 11141-16-5 | Aroclor-1232 | 100 | W W |
| 53469-21-9 | Arocior-1242 | 100 | TO U |
| 12672-29-6 | Aroclor-1248 | 100 | T (2) |
| 11097-69-1 | Aroclor-1254 | 350 | 3 |
| 11096-82-5 | Aroctor-1260 | 95 | J |
| | | | |

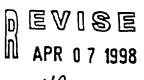
| Lab Name: ITS Environmental Lab Code: INCHVT Contract: 91082 Case: PCB SDG: FISH02 Phase Type: BIOTA Lab Sample ID: 345441 Phase Weight: 10.0 (g) Date Received: 10/18/97 Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/20/98 % Solids: 196 (APANK) Sulfur Clean-up: Y (Y/N) | | | | | | | K40538 |
|---|------------------|-------------------|------|-----------|------------------|----------|-------------|
| Contract: 91082 Case: PCB SDG: FISH02 Phase Type: BIOTA Lab Sample ID: 345441 Phase Weight: 10.0 (g) Date Received: 10/18/97 Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/20/98 | | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Phase Weight: 10.0 (g) Date Received: 10/18/97 Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/20/98 | | 91082 | - | Case: | РСВ | SDG: | FISH02 |
| njection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/20/98 | Phase Type: | ВІОТА | _ | | Lab Sample ID: | 345441 | |
| Dilution Factor: 1.0 Date Analyzed: 02/20/98 | Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Dilation Factor. | njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| % Solids: 196 VALITIES Sulfur Clean-up: Y (Y/N) | Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/20/98 | |
| | % Solids: | 100 VR 4HAY | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-------------|
| 12674-11-2 | Aroclor-1016 | 50 | ₩ \\ |
| 11104-28-2 | Arocior-1221 | 50 | <u> </u> |
| 11141-16-5 | Arocior-1232 | 50 | ى بر |
| 53469-21-9 | Arocior-1242 | 50 | U 11 |
| 12672-29-6 | Arocior-1248 | 130 | |
| 11097-69-1 | Arocior-1254 | 50 | ע ענ |
| 11096-82-5 | Arocior-1260 | 130 | |

EPA SAMPLE NO.

| | | | | | K40539 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | <u> </u> | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345442 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 100 KK 44198 | - - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|----------|-----|
| 12674-11-2 | Aroclor-1016 | 100 | 1 1 | W |
| 11104-28-2 | Arocior-1221 | 100 | اللا | W |
| 11141-16-5 | Arocior-1232 | 100 | 4 | Ų. |
| 53469-21-9 | Aroclor-1242 | 100 | 41. | W |
| 12672-29-6 | Aroclor-1248 | 320 | | 7 |
| 11097-69-1 | Aroclor-1254 | 650 | | 7 |
| 11096-82-5 | Aroclor-1260 | 100 | l k | UJ. |



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EPA SAMPLE NO.

| | | | | | | K40540 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|----|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | вюта | _ | | Lab Sample ID: | 345443 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/20/98 | | |
| % Solids: | 100 VA 17/198 | | | Sulfur Clean-up: | Y | (Y/N | 1) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | 2 |
|------------|--------------|--------------------------|-----------|----------|
| 12674-11-2 | Aroclor-1016 | 150 | R | W |
| 11104-28-2 | Aroclor-1221 | 150 | 1 | W |
| 11141-16-5 | Arocior-1232 | 150 | - L | W |
| 53469-21-9 | Arocior-1242 | 150 | · k | W |
| 12672-29-6 | Arocior-1248 | 680 | | |
| 11097-69-1 | Arociar-1254 | 900 | | |
| 11096-82-5 | Arocior-1260 | 150 | · · · | <u> </u> |

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PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40521 | 345425 | tissue | 0,3% |
| K40522 | 345426 | tissue | C.3% |
| K40523 | 345427 | tissue | 0.3% |
| K40525 | 345429 | tissue | 0.2% |
| K40525 | 345430 | tissue | C 4% |
| K40527 | 345431 | tissue | 0.8% |
| K40528 | 345432 | tissue | 03% |
| K40529 | 345433 | tissue | 0 4% |
| K40530-C | 345434 | tissue | 1.8% |
| K40531-C | 345435 | tissue | 2.0% |
| K40532-C | 345436 | tissue | 2.1% |
| K40533-C | 345437 | tissue | 2.5% |
| K40535 | 345438 | tissue | 1.6% |
| K40536 | 345439 | tissue | 0.5% |
| K40537 | 345440 | tissue | 0.2% |
| K40538 | 345441 | tissue | 1.6% |
| K40539 | 345442 | tissue | 0.8% |
| K40540 | 345443 | tissue | 1.3% |
| | | | |
| | | | |
| | | | |
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| | | | |
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| | | | |

CHAIN OF CUSTODY

MASIAND & BOUCK SHOINESPE, P.C.

| | | | | | LII/ | AIN OF CUS | 100 | 71 | HE | COL | W. | | |
|--------------|-------------|------------|----------|-----------------------|--|---|------|-------------------|-------------|------------|----------------|--------|---|
| PROJ. N | | PROJEC | THA | ME | | | 1 | | | | 7 | 7 | |
| GAS 24 7 | ,, [| Kola | ·h·· | . | R. W. Davila 1 Ech | NO. | Ι, | U _o _ | ļ. | | \mathcal{Y} | | |
| SAMPLERS | 5: 18.pn | alure) | | | Kive Resident Fish | —{ ~~ | W W | L _ | , | | | / / | / / / / |
| [| · | | 1 | | 7 | Of | 1 | (.) } | `/\ | N | \\$\mathrea{\} | | |
| | 22 | 7 | / | \mathbf{z}^{\prime} | 1 | CON | | | | Ÿ., | | | / / REMARKS |
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| 10517-61 | alis | | X | | Morrow Payo - ABSA # 2 | 1 | × | | × | | | | fillet and analyse hollowing incly is I proceedures discussed previously. |
| 10518-6 | 1015 | | 幺 | | | | _ _1 | | 1 | | | | proudures discussed premarily. |
| 410577-C | 10/15 | | ж | | | | | | | | _ | | |
| 10520-C | 10/15 | | <u> </u> | | - | | 11 | | | | _ | | |
| K40521 | | | | X | Halmufind Chep ABM# | 2 | 14 | _ [[| | | _ | _ | Fillet and any ex following milybers! |
| K40522 | _ _ | | | _1_ | | _ _ _ | 11 | _]] | | | _ | _ | procedures discussed praviously |
| K40523 | | | | | | _ _ _ | 11. | _ | | | | | Fillet and any ex following mily kind posedows discussed previously surp(skin-afffillets) SM Assa (Skin-an, |
| K10524 | | | | | | | -11 | _ | | | | | scules-on fillets). |
| K40515 | | | | | | _ - - | -11- | _ | | | | | |
| K40626 | _ _ | ļ | | _ _ | - 1 | _ - | - - | - | | | | _ | |
| K-40527 | | | i | -[-] | Murra Rad ABOR#2 SHIPS | - | -}{- | _ | _ | | | | |
| K40528 | | | | - | | - <u> </u> | 17 | - - | - | | | | |
| K-10529 | <u>v</u> | | | <u>\</u> | <u>*</u> | _ - | - - | - - | 긔 | | | | <u> </u> |
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| mi | 7/ | 2 | | 121 | 11/17 16:50 | | | | | | | | |
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| Relinquished | d by: 1. | | | | (Jale / Time Referred for Labora (Signature) | Men by: | | z/ii | 8/1 | 11. | MUS | 2 | COPY-OBICHAL ON FILE |

6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

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| | 40531-C | 1 1 | | | | | | | | | 11 | $ \cdot $ | | - | | | 1 | |
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| K | 40532-C | -لم | _k_ | L | | | <u>ىل</u> | | | | - - | - - | -∤ | | | | Placedons cliscossed previously: | |
| K | 40533-C | 10/1/27 | laia | X | | Lake Meg | m_ABSA | #4 Juvenile Sm Bus | | | _ | \coprod | _ | | | _ | | |
| 4 | 40534-51 | n | Ð | | | | 11 | | لرا | - | 1 | | | | | | Return C-1 to combine with 40534 C-2 when will fillow | at a |
| | 40535 | ١. | 10' 5 | | Y | 1 1/ 01/- | ^^ | Atto Alile | 1 | | \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ | | , | | | | Filet car fi (skin-of) fillers) and lass (skin-on, | (lat |
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| | K40537 | | | | | | | | | | - | 1.1. | . _ | | | | analytical procedures document proviously | |
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| ľ | Relinquish | ed by: (S | iggalture) |) | | DATE | TIME | Received by: (Signature) | | Rei | Inqui | shed | by: | (Signa | lure) | | DATE TIME Relinquished by: (Signature) | |
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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH03

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH03 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sneets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| j | | | | | Analyses | | | | | | |
|-----------|--------|--------|------------------|-----|----------|-----|--|--|--|--|--|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | PCB | TAL | %LIP![| | | |
| K40542 | 345446 | tissue | 10/17/97 | | | x | | х | | | |
| K40543 | 345447 | tissue | 10/16/97 | | | x | | γ | | | |
| K40544 | 345448 | tissue | 10/16/97 | | | x | | × | | | |
| K40545 | 345449 | tissue | 10/16/97 | | | x | | x | | | |
| K40546 | 345450 | tissue | 10/16/97 | | | x | | x | | | |
| K40547 | 345451 | tissue | 10/16/97 | | | x | | x | | | |
| K40548 | 345452 | tissue | 10/16/97 | | | x | | × | | | |
| K40549 | 345453 | tissue | 10/16/97 | | | x | | x | | | |
| K40550 | 345454 | tissue | 10/16/97 | | | x | | x | | | |
| K40552 | 345510 | tissue | 10/20/97 | | | x | | × | | | |
| K40553 | 345511 | tissue | 10/20/97 | | | × | | × | | | |
| K40554 | 345512 | tissue | 10/20/97 | | | x | | x | | | |
| K40555 | 345513 | tissue | 10/20/97 | | | x | | х | | | |
| K40556 | 345514 | tissue | 10/20/97 | | | x | | х | | | |
| K40557 | 345515 | tissue | 10/20/97 | | | x | | x | | | |
| K40568 | 345516 | tissue | 10/21/97 | | | x | | × | | | |
| K40569 | 345517 | tissue | 10/21/97 | | | × | | x | | | |
| K40570 | 345518 | tissue | 10/21/97 | | | x | | х | | | |
| K40571 | 345519 | tissue | 10/21/97 | | | x | | x | | | |
| K40572 | 345520 | tissue | 10/21/97 | | | x | | х | | | |
| | | | | 1 | i – | 1 | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries for both surrogates were above control limits in samples K40544 and K40547. All positive data for these samples have been qualified as estimated based on the recoveries. All other surrogate recoveries were within control limits

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

Due to a poor chromatographic pattern match, data for Aroclor 1254 in sample K40549, data for Aroclor 1260 in sample K40552 and data for Aroclor 1242 and 1260 in sample K40548 have been qualified as estimated with presumptive evidence of identification.

The Aroclors present in sample K40550 have been misidentified. The correct identifications should be Aroclors 1248, 1254 and 1260. The data have been corrected to reflect the change.

All other Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| PCB Data Review Checklis | t | | |
|--|-------------|----------|-------------|
| | YES | NO | NA_ |
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | <u> </u> | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u>X</u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | | X | |
| Were matrix spikes analyzed at the required frequency? | | X | · |
| How many spike recoveries were outside of QC limits? | | | |
| NA out of NA | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| NA out of NA | | | |
| <u>Blanks</u> | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | <u>X</u> | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X_ |

PCB Data Review Checklist - Page 2

| | YES | NO | NA_ |
|---|----------|-------------|-------------|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Arocior 1016/1260 | <u> </u> | | |
| Aroclor 1221 | <u> </u> | | |
| Aroclor 1232 | <u> </u> | | |
| Aroclor 1242 | <u> </u> | | |
| Arocior 1248 | <u> </u> | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | x | | |
| Are %D values for all compounds within limits (less than 15%)? | x | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | <u>X</u> | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | <u> </u> |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | x | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | x | | • |
| Do the combined column and individual column Aroclor identifications agree? | x | | |
| Were there any false negatives? | | <u> </u> | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA_ |
|--|----------|----|----------|
| Was GC/MS confirmation provided when required? | | | <u>X</u> |
| Compound Quantitation and Reported Detection Limits | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surro | gates |
|-----------|--------------|-------|-------|
| | | TCX | DCB |
| K40542 | +26 | | · |
| K40543 | +26 | | |
| K40544 | +29 | | |
| K40545 | +26 | | |
| K40546 | +26 | | |
| K40547 | +29 | | |
| K40548 | +26 | | |
| K40549 | +26 | | |
| K40550 | +26 | | |
| K40552 | +26 | | |
| K40553 | +26 | | |
| K40554 | +26 | | |
| K40555 | +26 | | |
| K40556 | +25 | | |
| K40557 | +26 | | |
| K40568 | +26 | | |
| K40569 | +26 | | |
| K40570 | +26 | | |
| K40571 | +26 | | |
| K40572 | +26 | | |
| | | | |
| | | | |
| | | | |
| | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogates diluted out Recovery high D

Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date | 2/18/98- | 2/20/98 | 2/20/98 | 2/21 | 2/21 | 2/21 | 2/21 | 2/21 |
|----------------------|----------------|---------------|---------------|--|---------------|--|--|-------------|
| Time. | 2/19/98 | 2251 | 2317_ | 0435 | 0001 | 1204 | 1231 | 1748 |
| | Initial Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont Cal |
| | %RSD | %0_ | % D | %D | %D | %D | %D | % 0 |
| Arocior 1016 | ok | | |) | | | | |
| Aroctor 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | <u> </u> |
| Arocior 1242 | ok | | ok_ | | | | | |
| Arociar 1248 | ok | ok | | ok | | ok | | l ok |
| Arociar 1254 | ok | | | | ok | | | <u> </u> |
| Arocior 1250 | ok | | | | | | ок | |
| Tetrachioro-m-xviene | ok | | | | | <u> </u> | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
| | | | | | | | | |
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| | | | | | | | <u> </u> | 1 |
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| | <u> </u> | † | | | | | | + |

PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

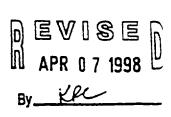
| Date: | 2/18/98- | 2/21/98 | 2/23/98 | 2/23 | 2/24 | 2/24 | | |
|----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|---|---|
| î ime | 2/19/98 | 1815 | 2329 | 2355 | 0141 | 0207 | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | | |
| | %RSD | %D | ۵% | %D | %D | %D | | |
| Aroclor 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Arocior 1232 | ok . | | · | | | | | - |
| Arocior 1242 | ok | ok | - | ok | | | | |
| Arocior 1248 | ok | | ok | | ok | | | |
| Arocior 1254 | ok | | | | | ok | | |
| Arocior 1260 | ok | | _ | | | | | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | <u> </u> | ļ | | |
| Affected Samples: | | | | | | | | |
| | <u> </u> | | | | | | | ļ |
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| CORRECTED ANALYSIS SUMMARY FORMS |
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EPA SAMPLE NO.

| | | | | | | K40542 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| , Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345446 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 VEC HTIME | _ | | Sulfur Clean-up: | Y | (| (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|--------------------------|----------|----|
| 12674-11-2 | Arocior-1016 | 50 | 4٤ | W |
| 11104-28-2 | Arocior-1221 | 50 | ধ | G. |
| 11141-16-5 | Arocior-1232 | 50 | 8 | W |
| 53469-21-9 | Aroclor-1242 | 50 | 75 | D |
| 12672-29-6 | Arocior-1248 | 250 | | 7, |
| 11097-69-1 | Aroclor-1254 | 170 | <u> </u> | Ť. |
| 11096-82-5 | Aroclor-1260 | 92 | | 7 |



11000

| Lab Name: ITS Environmental Lab Code: INCHVT Contract: 91082 Case: PCB SDG: FISH03 | |
|---|-----|
| Contract: 91082 Case: PCB SDG: FISH03 | |
| | |
| Phase Type: BIOTA Lab Sample ID: 345447 | |
| Phase Weight: 10.0 (g) Date Received: 10/18/97 | |
| njection Volume: 1.0 (uL) Date Extracted: 12/17/97 | |
| Dilution Factor: 1.0 Date Analyzed: 02/21/98 | |
| % Solids: 196 Vik 4/1/14% Sulfur Clean-up: Y | /N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | 1 10 U |
| 11104-28-2 | Arocior-1221 | 50 | u de |
| 11141-16-5 | Aroclor-1232 | 50 | ټ) 44 |
| 3469-21-9 | Arocior-1242 | 50 | 4 0 |
| 12672-29-6 | Arocior-1248 | 170 | |
| 11097-69-1 | Aroclor-1254 | 150 | 7 |
| 11096-82-5 | Atocior-1260 | 43 | J |

| | | | | | 1 | K40544 | Ì |
|------------------|-------------------|------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PC8 | SDG: | FISH03 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345448 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 4.0 | | | Date Analyzed: | 02/24/98 | | |
| % Solids: | 100 x 12198 | | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 200 | W 10 | |
| 11104-28-2 | Arocior-1221 | 200 | R 10 | |
| 11141-16-5 | Aroclor-1232 | 200 | # 02 | |
| 53469-21-9 | Arocior-1242 | 200 | 1 4 0 | |
| 12672-29-6 | Arocior-1248 | 930 | 7 | |
| 11097-69-1 | Aroclor-1254 | 1400 | 7 | |
| 11096-82-5 | Aroclor-1260 | 290 | 7 | |

EPA SAMPLE NO.

| | | | | | | K40545 |
|------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345449 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 LPC ANTAY | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 1 V |
| 11104-28-2 | Aroclar-1221 | 50 | 18 W. |
| 11141-16-5 | Arocior-1232 | 50 | Tu 4 |
| 53469-21-9 | Aroclor-1242 | 60 | 7 |
| 12672-29-6 | Arocior-1248 | 50 | AF (E |
| 11097-69-1 | Aroctor-1254 | 280 | 7 |
| 11096-82-5 | Aroctor-1260 | 44 | J |

---- 20

| | | | | | | K40546 | |
|------------------|-------------------|--------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample (D: | 345450 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KPL 41148 | - - | | Sulfur Clean-up: | Y | (| (Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | D. K | |
| 11104-28-2 | Aroclor-1221 | 50 | D & | |
| 11141-16-5 | Aroclor-1232 | 50 | # 5 | |
| 53469-21-9 | Aroclor-1242 | 50 | # W | |
| 12672-29-6 | Aroclor-1248 | 430 | 7 | |
| 11097-69-1 | Arocior-1254 | 50 | 1 JE 05 | |
| 11096-82-5 | Arocior-1260 | 110 | 7 | |

| | | | | | | K40547 |
|------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHYT | Ĺ | |
| Contract: | 91082 | _ | Case: | PC8 | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345451 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 4.0 | | | Date Analyzed: | 02/24/98 | |
| % Solids: | 100 VPL 41148 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|--------------|--|
| 12674-11-2 | Aroclor-1016 | 200 | The state of | |
| 11104-28-2 | Arocior-1221 | 200 | 4 12 | |
| 11141-16-5 | Aroclor-1232 | 200 | 110 | |
| 53469-21-9 | Aroctor-1242 | 200 | ₩ ~ | |
| 12672-29-6 | Arocior-1248 | 1300 | | |
| 11097-69-1 | Aroctor-1254 | 3000 | 7. | |
| 11096-82-5 | Aroctor-1260 | 200 | <u> </u> | |

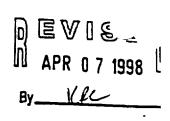
| | | | | | | K40548 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | - | Case: | РСВ | SDG. | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345452 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 CR AITHY | • | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 50 | T V CO |
| 11104-28-2 | Arocior-1221 | 50 | TW W |
| 11141-16-5 | Aroclor-1232 | 50 | 80 |
| 53469-21-9 | Arocior-1242 | 240 | NU |
| 12672-29-6 | Arocior-1248 | 50 | 21 Tr 115 |
| 11097-69-1 | Arocior-1254 | 50 | R 12 |
| 11096-82-5 | Aroclor-1260 | 110 | JN |

EPA SAMPLE NO.

| | | | | | K40549 |
|-------------------|-------------------|----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code | : INCHVT | | |
| Contract: | 91082 | _ Case | PC8 | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345453 | _ |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | _ | Date Analyzed: | 02/21/98 | |
| % Solids: | 200 YEL 41748 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND CONCENTRATION (ug/Kg) | | QUALIFIER | | |
|------------|--------------------------------|------|-----------|--|--|
| 12674-11-2 | Aroclor-1016 | 150 | W W | | |
| 11104-28-2 | Aroclor-1221 | 150 | R W | | |
| 11141-16-5 | Arocior-1232 | 150 | W W | | |
| 53469-21-9 | Arocior-1242 | 150 | T W UT | | |
| 12672-29-6 | Arocior-1248 | 150 | # U. | | |
| 11097-69-1 | Aroctor-1254 | 1000 | JID | | |
| 11096-82-5 | Aroctor-1250 | 150 | 74 | | |



7000077

| | | | | | | K40550 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | TVHONI | | | |
| Contract: | 91082 | - | Case: | PCB . | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345454 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KR 41748 | | | Sulfur Clean-up: | Y | (Y/N |) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|--|--|
| 12674-11-2 | Arocior-1016 | 50 | THE TOTAL STATE OF THE PARTY OF | |
| 11104-28-2 | Arocior-1221 | 50 | # 12 | |
| 11141-16-5 | Arocior-1232 | 50 | W & | |
| 53469-21-9 | Arocior-1242 | 50 | \$ 15 | |
| 12672-29-6 | Arocior-1248 | 3 70 580 | 7 | |
| 11097-69-1 | Arocior-1254 | 230 50 | 74 75 | |
| 11096-82-5 | Arocior-1260 | چې 120 | 7 | |

| | | | | | | K40552 | |
|-------------------|-------------------|------|-----------|------------------|----------|-------------|----|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | • | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345510 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 XEC 417198 | | | Sulfur Clean-up: | Y | (Y/N | 1) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 150 | Ju W |
| 11104-28-2 | Aroclor-1221 | 150 | IN CA |
| 11141-16-5 | Aroclor-1232 | 150 | W 11 |
| 53469-21-9 | Aroctor-1242 | 150 | स् |
| 12672-29-6 | Arocior-1248 | 150 | \$ V.0 |
| 11097-69-1 | Aroclor-1254 | 150 | 4 U |
| 11096-82-5 | Aroclor-1260 | 270 | JL |

| | | | | | 1 | K40553 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample (D: | 345511 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KR 417198 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | EN & | |
| 11104-28-2 | Aroclor-1221 | 50 | R 122 | |
| 11141-16-5 | Aroclor-1232 | 50 | THE WIT | |
| 53469-21-9 | Arocior-1242 | 50 | 8 m | |
| 12672-29-6 | Arocior-1248 | 50 | E W | |
| 11097-69-1 | Arocior-1254 | 87 | 7 | |
| 11096-82-5 | Arocior-1260 | 34 | J | |

| | | | | | | K40554 | | į |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | L | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | _ | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345512 | | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/21/98 | | | |
| % Solids: | 100 UL 41198 | _ | | Sulfur Clean-up: | Y | | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-------------|
| 12674-11-2 | Arocior-1016 | 150 | N W |
| 11104-28-2 | Arocior-1221 | 150 | # 12 |
| 11141-16-5 | Aroclor-1232 | 150 | y (2) |
| 53469-21-9 | Arocior-1242 | 150 | <i>" بر</i> |
| 12672-29-6 | Aroctor-1248 | 150 | · · |
| 11097-69-1 | Aroctor-1254 | 190 | 7 |
| 11096-82-5 | Aroctor-1260 | 460 | . 7 |

| | | | | | | K40555 | |
|------------------|-------------------|------|-----------|------------------|----------|--------------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | ` | |
| Contract: | 91082 | | Case: | РСВ | SDG: | FiSH03 | |
| Phase Type: | BIOTA | | | Lab Sample f0: | 345513 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | _ |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | , |
| Dilution Factor: | 2.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KEL 47198 | | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 100 | W W | |
| 11104-28-2 | Aroclor-1221 | 100 | EN A | |
| 11141-16-5 | Aroclor-1232 | 100 | 20 R | |
| 53469-21-9 | Aroclor-1242 | 100 | 4 10 | |
| 12672-29-6 | Aroclor-1248 | 100 | N W | |
| 11097-69-1 | Aroclor-1254 | 310 | 7 | |
| 11096-82-5 | Arocior-1260 | 80 | J | |

| | | | | | | | K40556 | |
|-------------------|-------------------|------|-----------|----------|-----------|----------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | • | <u> </u> | | |
| Contract: | 91082 | _ | Case: | PC8 | | SDG: _ | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sa | imple ID: | 345514 | | _ |
| Phase Weight: | 10.0 | (g) | | Date R | leceived: | 10/23/97 | | _ |
| Injection Volume: | 1.0 | (uL) | | Date E | xtracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date A | nalyzed: | 02/21/98 | | |
| % Solids: | 100 KR 41719K | _ | | Sulfur C | lean-up: | Y | | (Y/N) |
| | | | | | | | | |

| 1104-28-2 Aroctor-1221 | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | JU W | |
| 11104-28-2 | Aroclor-1221 | 50 | 1 4 5 | |
| 11141-16-5 | Arocior-1232 | 50 | \$ W | |
| 53469-21-9 | Arocior-1242 | 50 | <u>u</u> | |
| 12672-29-6 | Aroclor-1248 | 50 | Ъ. | |
| 11097-69-1 | Aroclor-1254 | 520 | 7 | |
| 11096-82-5 | Aroclor-1260 | 100 | 7 | |

| | | | | ĸ | (40557 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345515 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 YR AMIAK | | Suifur Clean-up: | Υ | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | 20 B | |
| 11104-28-2 | Arocior-1221 | 50 | \$ 10 | |
| 11141-16-5 | Aroclor-1232 | 50 | THE WATER | |
| 53469-21-9 | Arocior-1242 | 50 | LV A | |
| 12672-29-6 | Aroclor-1248 | 50 | D 4 | |
| 11097-69-1 | Aroclor-1254 | 140 | 7 | |
| 11096-82-5 | Arocior-1260 | 32 | J | |

| | | | | · | | K40568 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345516 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KK 41198 | | | Sulfur Clean-up: | Υ | | Y/N) |

| 104-28-2 Aroctor-1221 141-16-5 Aroctor-1232 | COMPOUND | CONCENTRATION (ug/Kg) | | |
|--|--------------|--------------------------|------|--|
| 12674-11-2 | Arocior-1016 | 50 | 8 L | |
| 11104-28-2 | Aroctor-1221 | 50 | # VC | |
| 11141-16-5 | Arocior-1232 | 50 | A NO | |
| 53469-21-9 | Aroclor-1242 | 50 | # W | |
| 12672-29-6 | Arocior-1248 | 110 | | |
| 11097-69-1 | Aroclor-1254 | 140 | 2 | |
| 11096-82-5 | Aroctor-1260 | 58 | 3 | |

| | | | | | | K40569 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | L | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345517 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 5.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 108 x8c 417198 | | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroctor-1016 | 250 | 1 4 0 | |
| 11104-28-2 | Aroclor-1221 | 250 | 1 K WJ | |
| 11141-16-5 | Arocior-1232 | 250 | Z) R | |
| 53469-21-9 | Arocior-1242 | 250 | 8 00 | |
| 12672-29-6 | Arocior-1248 | 250 | A CO | |
| 11097-69-1 | Arocior-1254 | 1400 | 4 | |
| 11096-82-5 | Aroclor-1260 | 250 | J | |

| | | | | | | K40570 |
|------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | |
| Contract: | 91082 | • | Case: | PCB | SDG: | FISH03 |
| Phase Type: | ВІОТА | | | Lab Sample ID: | 345518 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 CR 411198 | | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|---------------|
| 12674-11-2 | Aroclor-1016 | 150 | # 45 |
| 11104-28-2 | Arocior-1221 | 150 | الا 20 الا |
| 11141-16-5 | Arocior-1232 | 150 | A 12 |
| 53469-21-9 | Arocior-1242 | 150 | P 12 |
| 12672-29-6 | Aroctor-1248 | 150 | # Ui |
| 11097-69-1 | Aroclor-1254 | 730 | 7 |
| 11096-82-5 | Aroctor-1260 | 180 | 7 |

EPA SAMPLE NO.

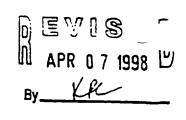
K40571 ITS Environmental Lab Code: INCHVT Lab Name: 91082 PCB FISH03 Case: SDG: Contract: BIOTA 345519 Lab Sample ID: Phase Type: 10.0 (g) 10/23/97 Phase Weight: Date Received: 1.0 (uL) 12/17/97 Injection Volume: Date Extracted: 1.0 02/21/98 Dilution Factor: Date Analyzed: 100 VE AMPR Y (Y/N) % Solids: Sulfur Clean-up:

| 50 | CV & |
|------|------------------------------|
| 50 | TU & |
| 50 | R 1/2 |
| 50 | N W |
| 150 | 7 |
| 370 | 7 |
| . 47 | J |
| - | 50 50 50 150 370 |

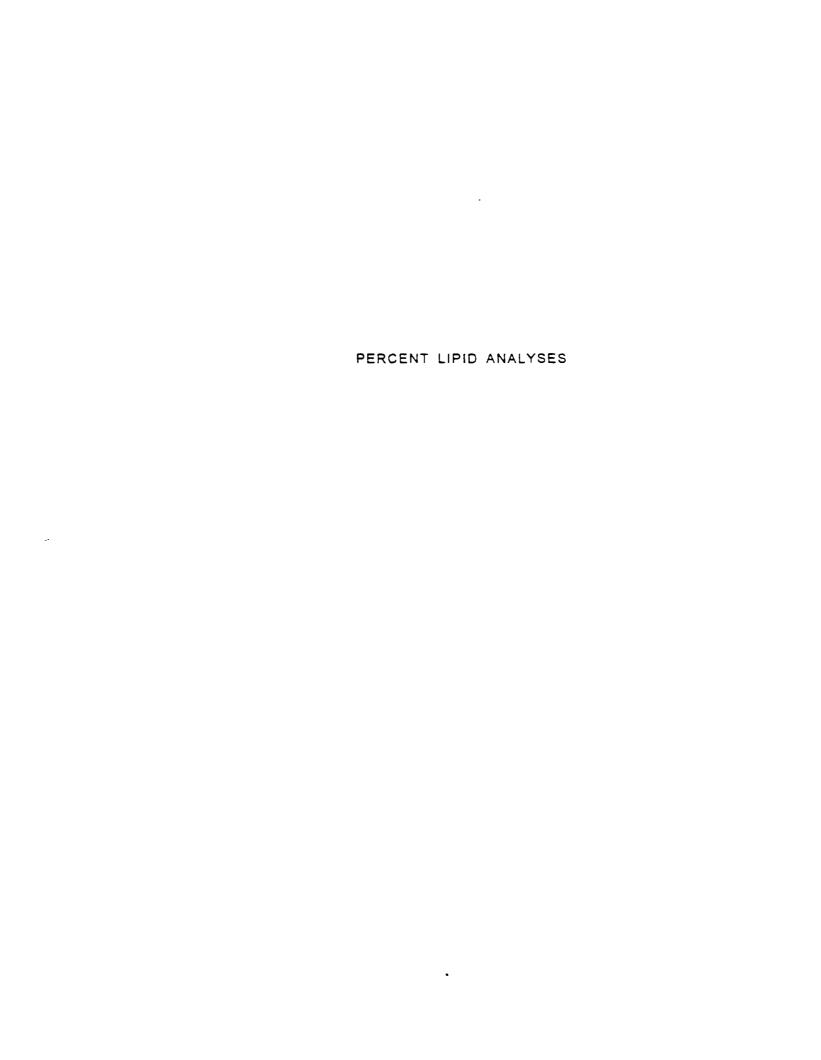
EPA SAMPLE NO.

| | | | | 1 | K40572 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345520 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 CPL AITHY | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | प्र पत् |
| 11104-28-2 | Arocior-1221 | 50 | TW # |
| 11141-16-5 | Aroclor-1232 | 50 | A 1/2 |
| 53469-21-9 | Arocior-1242 | 50 | THE VIEW |
| 12672-29-6 | Arocior-1248 | 190 | |
| 11097-69-1 | Aroclor-1254 | 300 | 7 |
| 11096-82-5 | Aroclor-1260 | \$8 | 3 |



000186



Percent Lipids Results

| Sample ID | Lab iD | Matrix | Result |
|-----------|--------|--------|--------|
| K40542 | 345446 | tissue | C 4% |
| K40543 | 345447 | tissue | 1.4% |
| K40544 | 345448 | tissue | 0.3% |
| K40545 | 345449 | tissue | 0.8% |
| K40546 | 345450 | tissue | 0.7% |
| K40547 | 345451 | tissue | 0.6% |
| K40548 | 345452 | tissue | 0.3% |
| K40549 | 345453 | tissue | 0.7% |
| K40550 | 345454 | tissue | 0.7% |
| K40552 | 345510 | tissue | 0.4% |
| K40553 | 345511 | tissue | 0.2% |
| K40554 | 345512 | tissue | 1.0% |
| K40555 | 345513 | tissue | 0.6% |
| K40556 | 345514 | tissue | 0.8% |
| K40557 | 345515 | tisue | 0.3% |
| K40568 | 345516 | tissue | 0.4% |
| K40569 | 345517 | tissue | 1.1% |
| K40570 | 345518 | tissue | 0.3% |
| K40571 | 345519 | tissue | 0.3% |
| K40572 | 345520 | tissue | 0.4% |
| | | | |
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CHAIN OF CUSTODY



6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

| PROJ. NO. | 1 | ECT NA | | | | | | | | | 7 | | 7 | 7 / | 7 | | 0 |
|-----------------------------|--------------------|--|---------------|--------------|--------------------|----------------|--|----------|---------------|----------------|-------------|----------|---|-------|----|--|-----------|
| 6 <u>4524711</u> Sampler | S: (SIAD | lamo | zo_/ | River | Lesidai | t lich | | 3 | % % /* | | Jin.C | <u> </u> | | | | | |
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| STÁ. NO. | DATE | TIME | OMP. | 3 | | STAT | ION LOCATION | / | 10 1/2 HAME | , | | | X / | // | // | REMARKS | <u>'.</u> |
| 4020A-CI | างไปสา | 14'0 | $\frac{ }{X}$ | 9 | New Rich | moul A | BSA#11 Juvanile Sm Orss | <u> </u> | ` 1 | | y | - | | | | Combine Kilosert Co with Kilosert-CI(provide | ما «ملم) |
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| 40531-C | | | | - | | | | _ | | \prod | | | | | | 1 | • - |
| 40532-0 | | - - | - - - | | | - | | | | - - | 1-1 | | · | | | whole buy composites and any ze follows | 3GRAIYIIG |
| | | l | - - <u>k</u> | - | 1 14 44 | مبر | # | | | - - | - - | - | | - | — | Plucedons cliscosed previously- | |
| 40533-6 | n ग्रामिस | 11010 | X_ | | bute Meg | 11 17987-51 | #9 Juvenile Sm Bus | | | - | ╁ | - | - | | | ₩ | |
| 10534 <u>-</u> C1 | | | - | | | | | | <u>-</u> | - | | - | | | | Retain C-1 to combine will 40534 C-2 who | |
| 40535 | व्रवीस्य | 10:00 | - | 14 | Lala Allo | gan Albiz | 1tg Advit Cop | - | <u></u> . | 1 | 1 | - | | | | Fillet coep (5km-off Fillets) and bess. | |
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| KY0537 | | _ _ | | - - | | | | | | | | | | | | analytical procedures discussed previous | γ |
| <4053 % | | _ | | - - | | | | | | - - | . . | | | | | | |
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| 440540 | | _ _ | .[| | Lala Alba | an_MSA | #9_Adult_Bass | | | _ | . | | | | | | |
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6723 Towpalh Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

CHAIN OF CUSTODY RECORD

| • | | | | | | | | | | | | | | | | | | | |
|--|---------------------|--------------------|------------|---------|------------------|-------------------|--|---------|----------------------|----------|------------|--|------------|-----------------|-----|------------|---------|-------------------------------------|--|
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| K <u>40543</u> | 10/14/51 | 12:12 | 8 | × | New Ri | /immad | TION LOCATION ABSA#// All the Caup BSA #// All the Style BSA #// BSA #// All the Style BSA #// BSA #// All the Style BSA #// BSA #// All the Style BSA #// BSA #// All the Style BSA #// BS | 1 | | X | / <u>X</u> | 50/ | (| / | | / | | | |
| K40544 | 12/4/47 | 1510 | | X | New Arch | inoral Al | SSA#11 AUNI STESS | | \ | K | X | | | | { | illet and | > هـ | Tayp (Skin- | of fillets) and less |
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| K40546 | | | | | | | | _ | _ | | _ | | | | f | ئاامىلىمىي | analy t | ing brings | es discussed |
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| k46548 | | | | | | | | _ | | | | | | | , | | | | |
| K40549 | | | | $\ \ $ | | | | | Γ | | | | | | | | | | |
| K45350 | | 1- | | 1 | | | • | | | | | | - | | | | | | |
| ISTORES | | | - | | | ··· - > | | | | | | | | _ | | | | | |
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| Relinquishe | ia i | ignature) | | | DATE | TIME | Received for Laboratory by: (Signature) | <u></u> | -(| 1 | TE | | | Ť | IME | Rema | | I | (|
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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH04

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:



Blasland, Bouck & Lee, Inc.
Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FiSH04 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| | | | | Analyses | | | es . | |
|-----------|--------|--------|------------------|----------|-----|-----|------|--------|
| Sample ID | Lab ID | Matrix | Sampling Date | VOA | BNA | РСВ | TAL | %LIP1D |
| K40573 | 345521 | tissue | 10/21/97 | | | × | | × |
| K40574 | 345522 | tissue | 10/21/97 | | | x | | x |
| K40551-C | 345523 | tissue | 10/20/97 | | | × | | x |
| K40564-C | 345524 | tissue | 10/21/97 | | | x | | x |
| K40565-C | 345525 | tissue | 10/21/97 | | | x | | × |
| K40566-C | 345526 | tissue | 10/21/97 | | | x | | × |
| K40567-C | 345527 | tissue | 10/21/97 | | | × | | x |
| K40558 | 345528 | tissue | 10/20/97 | | | х | | x |
| K40559 | 345529 | tissue | 10/20/97 | | | x | | × |
| K40560 | 345530 | tissue | 10/20/97 | | | x | | × |
| K40561 | 345531 | tissue | 10/20/97 | | | х | | x |
| K40562 | 345532 | tissue | 10/20/97 | | | x | | × |
| K40563 | 345533 | tissue | 10/20/97 | | | × | | × |
| K40575 | 345534 | tissue | 10/21/97 | | | x | | x |
| K40576 | 345535 | tissue | 10/21/97 | | | × | | x |
| K40577 | 345536 | tissue | 10/21/97 | | | × | | × |
| K40578 | 345537 | tissue | 10/21/97 | | | x | | х |
| K40579 | 345538 | tissue | 10/21/97 | | | x | | x |
| K40580 | 345539 | tissue | 10/21/97 | | | х | | × |
| K40582 | 345540 | tissue | 10/21/97 | | | х | | x |
| | | | | | | | | |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis—It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding time.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40565-C. K40566-C and K40567-C. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

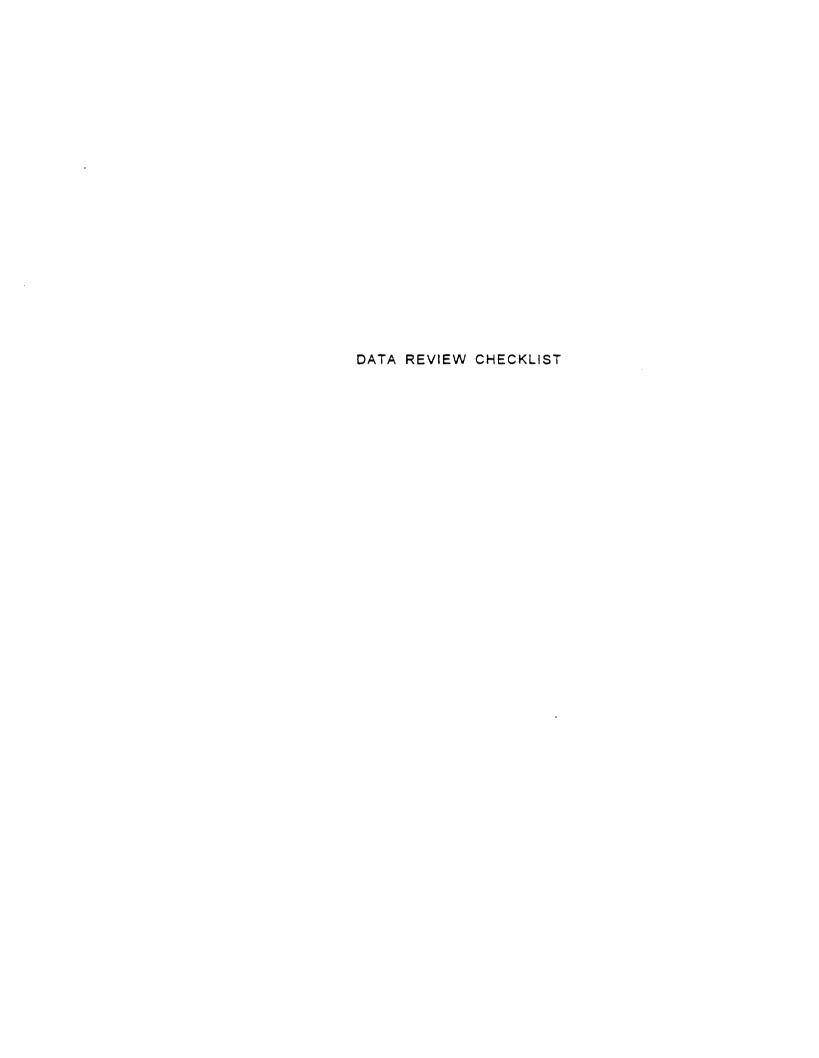
All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

All matrix spike and matrix spike duplicate recoveries and relative percent differences between recoveries were within control limits. All matrix spike blank recoveries were also within control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA |
|--|----------|-------------|----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | X | |
| Holding Times | | | |
| Have any holding times been exceeded? | | X | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | <u> </u> | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | <u> </u> | | |
| Were matrix spikes analyzed at the required frequency? | <u> </u> | | |
| How many spike recoveries were outside of QC limits? | | | |
| out of4 | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| Blanks | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |

PCB Data Review Checklist - Page 2

| | YES | NO | NA_ |
|---|-------------|----|-----|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | - | |
| Aroclor 1221 | <u> x</u> | | |
| Aroclor 1232 | <u> </u> | | |
| Arocior 1242 | X | - | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | x | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | X | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | x | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X_ | _ |

PCB Data Review Checklist - Page 3

| | YES | NO | NA_ |
|--|----------|-------------|-----|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limits | <u> </u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surro | gates |
|-----------|--------------|-------|-------|
| | | тсх | DCB |
| K40573 | | | |
| K40574 | | | |
| K40551-C | | | |
| K40564-C | | | |
| K40565-C | | | |
| K40566-C | | | |
| K40567-C | | | · |
| K40558 | | | |
| K40559 | | | |
| K40560 | | | |
| K40561 | | | |
| K40562 | | | |
| K40563 | | | |
| K40575 | | | |
| K40576 | | | |
| K40577 | | | |
| K40578 | | | |
| K40579 | | | |
| K40580 | | | |
| K40582 | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

Surrogates diluted out Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

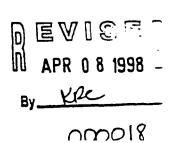
Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date | 3/04/98- | 3/05/98 | 3/05/98 | 3/05 | 3/05 | 3/05 | 3/06 | 3.06 |
|----------------------|----------------|---------------|---------------|---------------|---------------|---------------|--------------|----------|
| Time: | 3/05/98 | 0927 | 0953 | 1505 | 1531 | 2017 | 0104 | 0130 |
| | Initial Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. |
| | %RSD | %D | % D | %D | % D | %D | %D | %0 |
| Aroclor 1016 | ok | | | | | | | ļ |
| Araciar 1221 | ok | | | | | | | ļ |
| Arocior 1232 | ok | | | | | | | |
| Arocior 1242 | ok | | | | ок | | | ļ |
| Arocior 1248 | ok | ok | | ok | | | ok | |
| Arocior 1254 | ok | | | | | ok | | ļ |
| Aroclor 1260 | ok | | ok | | | | | ok |
| Tetrachioro-m-xylene | ok | | | | | | | <u> </u> |
| Decachlorobiphenyl | ok | | | | | | | <u> </u> |
| Affected Samples: | | | | | | | | |
| | | ļ | | | <u> </u> | | | |
| | | | | | | <u></u> | | |
| | | | | | | | | |

CORRECTED ANALYSIS SUMMARY FORMS

| | | | | | K40574 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345522 | |
| Phase Weight: | 10.3 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 VE 418194 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Arocior-1221 | 49 | U |
| 11141-16-5 | Aroclor-1232 | 49 | U |
| 53469-21-9 | Arocior-1242 | 49 | U |
| 12672-29-6 | Arocior-1248 | 130 | 1 |
| 11097-69-1 | Aroclor-1254 | 230 | |
| 11096-82-5 | Aroclor-1260 | 53 | |



EPA SAMPLE NO.

(Y/N)

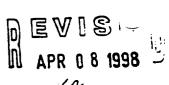
| | | | | | 1 | (40551-C | |
|------------------|-------------------|------|-----------|-----------------|----------|----------|--|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345523 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 02/26/98 | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 03/05/98 | | |

100 VAC 18193

% Solids:

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | U |
| 11104-28-2 | Aroclor-1221 | 100 | U |
| 11141-16-5 | Arocior-1232 | 100 | U |
| 53469-21-9 | Arocior-1242 | 100 | U |
| 12672-29-6 | Arocior-1248 | 100 | U |
| 11097-69-1 | Aroclor-1254 | 220 | |
| 11096-82-5 | Arocior-1260 | 100 | U |

Sulfur Clean-up:



| | | | | к | 40564-C |
|------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | ВІОТА | _ | Lab Sample ID: | 345524 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| jection Volume: | 1.0 | (uL) | Date Extracted: | 02/26/98 | |
| Dilution Factor: | 5.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 VEL 418198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 250 | U |
| 11104-28-2 | Arocior-1221 | 250 | U |
| 11141-16-5 | Arocior-1232 | 250 | U |
| 53469-21-9 | Aroclor-1242 | 250 | U |
| 12672-29-6 | Aroclor-1248 | 950 | |
| 11097-69-1 | Arocior-1254 | 640 | 1 |
| 11096-82-5 | Aroclor-1260 | 220 | |

(g)

(uL)

ITS Environmental

91082

BIOTA

10.0

1.0

10.0

100 Ker 418198

Lab Name:

. Contract:

Phase Type:

Phase Weight:

Injection Volume:

Dilution Factor:

% Solids:

EPA SAMPLE NO.

| | | | K40565-C |
|-----------|-----------------|----------|----------|
| Lab Code: | INCHVT | | |
| Case: | PCB | SDG: | FISH04 |
| | Lab Sample ID: | 345525 | |
| | Date Received: | 10/23/97 | • |
| | Date Extracted: | 02/26/98 | |
| | Date Analyzed: | 03/05/98 | <u> </u> |

Y

(Y/N)

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 500 | U |
| 11104-28-2 | Aroclor-1221 | 500 | U |
| 11141-16-5 | Arocior-1232 | 500 | U |
| 53469-21-9 | Arocior-1242 | 500 | U |
| 12672-29-6 | Aroclor-1248 | 700 | |
| 11097-69-1 | Aroclor-1254 | 440 | J |
| 11096-82-5 | Aroclor-1260 | 500 | U |

Date Analyzed:

Sulfur Clean-up:

| | | | | , K | 40566-C |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345526 | |
| Phase Weight: | 10.1 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/26/98 | |
| Dilution Factor: | 3.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 xpc 41 × 198 | , | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Araclar-1016 | 150 | Ü |
| 11104-28-2 | Arocior-1221 | 150 | U |
| 11141-16-5 | Arocior-1232 | 150 | U |
| 53469-21-9 | Aroclor-1242 | 150 | υ |
| 12672-29-6 | Aroclor-1248 | 670 | |
| 11097-69-1 | Aroclor-1254 | 660 | 1 |
| 11096-82-5 | Arocior-1260 | 170 | |



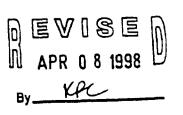
| | | | | K | 40567-C |
|------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | ļ | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345527 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/26/98 | |
| Dilution Factor: | 2.0 | _ | Date Analyzed: | 03/05/98 | • |
| % Solids: | 300 xAc 418/98 | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | U |
| 11104-28-2 | Arocior-1221 | 100 | l U |
| 11141-16-5 | Aroclor-1232 | 100 | U |
| 53469-21-9 | Aroclor-1242 | 100 | U |
| 12672-29-6 | Arocior-1248 | 320 | 1 |
| 11097-69-1 | Arocior-1254 | 190 | |
| 11096-82-5 | Aroctor-1260 | 100 | U |

EPA SAMPLE NO.

| | | K40558 |
|---|------------------------|--------|
| Lab Name: ITS Environmental Lab Code: INC | HVT | |
| Contract: 91082 Case: | PCB SDG: | FISH04 |
| Phase Type: BIOTA | Lab Sample ID: 34552 | 28 |
| Phase Weight: 10.0 (g) | Date Received: 10/23/ | 97 |
| njection Volume: 1.0 (uL) | Date Extracted: 02/26/ | 98 |
| Dilution Factor: 1.0 | Date Analyzed: 03/05/ | 98 |
| % Salids: 180 44 418/48 | Sulfur Clean-up: Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | Ú |
| 11104-28-2 | Arocior-1221 | 50 | Ú |
| 11141-16-5 | Aroclor-1232 | 50 | Ü |
| 53469-21-9 | Arocior-1242 | 50 | Ú |
| 12672-29-6 | Arocior-1248 | 50 | Ü |
| 11097-69-1 | Aroclor-1254 | 72 | |
| 11096-82-5 | Aroclor-1260 | 50 | j U |



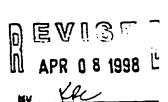
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| | | | | | K40559 |
|------------------|-------------------|----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code | : INCHVT | | |
| Contract: | 91082 | . Case | PC8 | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345529 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 V AL A16168 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Aroctor-1232 | 50 | υ |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 28 | J |
| 11096-82-5 | Aroclor-1260 | 50 | U |

| | | | | | K40560 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | _ Case: | РСВ | SDG: | FISH04 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345530 | |
| Phase Weight: | 10.2 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 xec 4/8/9 | 4 | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Arocior-1221 | 49 | U |
| 11141-16-5 | Arocior-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Arocior-1248 | 49 | į U |
| 11097-69-1 | Arocior-1254 | 78 | |
| 11096-82-5 | Aroclor-1260 | 49 | U |



| | | | | 1 | <40561 |
|------------------|-------------------|-----------|------------------|----------|------------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH04 |
| Phase Type: | ВІОТА | _ | Lab Sample ID: | 345531 | |
| Phase Weight: | 10.2 | (g) | Date Received: | 10/23/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 03/05/98 | |
| % Solids: | 105 VRC 410198 | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49 | U |
| 11104-28-2 | Arocior-1221 | 49 | U |
| 11141-16-5 | Arocior-1232 | 49 | U |
| 53469-21-9 | Aroclor-1242 | 49 | U |
| 12672-29-6 | Arocior-1248 | 49 | U |
| 11097-69-1 | Arocior-1254 | 100 | |
| 11096-82-5 | Aroclor-1260 | 72 | |

| Lab Name: ITS Environmental Lab Code: INCHVT | ł |
|--|-----|
| | |
| Contract: 91082 Case: PCB SDG: FISH04 | |
| Phase Type: BIOTA Lab Sample ID: 345532 | |
| Phase Weight: 10.1 (g) Date Received: 10/23/97 | |
| njection Volume: 1.0 (uL) Date Extracted: 02/23/98 | |
| Dilution Factor: 1.0 Date Analyzed: 03/05/98 | |
| * Solids: 196 学化 4 度 98 Sulfur Clean-up: Y (Y | /N) |

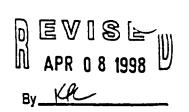
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12574-11-2 | Arocior-1016 | 50 | U | |
| 11104-28-2 | Arocior-1221 | 50 | U | |
| 11141-16-5 | Arocior-1232 | 50 | U | |
| 53469-21-9 | Aroclor-1242 | 50 | U | |
| 12672-29-6 | Aroclor-1248 | 50 | U | |
| 11097-69-1 | Aroctor-1254 | 44 | J | |
| 11096-82-5 | Aroclor-1260 | 50 | U | |

EPA SAMPLE NO.

| | K40563 | |
|--------|--------|--|
| SDG: | FISH04 | |
| 345533 | | |

| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345533 | |
| Phase Weight: | 10.1 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 CRC 418198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | . U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Arocior-1242 | 50 | U |
| 12672-29-6 | Arocior-1248 | 50 | U |
| 11097-69-1 | Arocior-1254 | 83 | |
| 11096-82-5 | Arocior-1260 | 50 | U |



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| | | | | | K40575 | |
|------------------|-------------------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | | J |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH04 | - |
| Phase Type: | BIOTA | | Lab Sample ID: | 345534 | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | | |
| Dilution Factor: | 3.0 | _ | Date Analyzed: | 03/05/98 | | |
| % Solids: | 300 XRC 418191 | • | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 150 | U | |
| 11104-28-2 | Arocior-1221 | 150 | U | |
| 11141-16-5 | Aroclor-1232 | 150 | U | |
| 53469-21-9 | Aroclor-1242 | 150 | U | |
| 12672-29-6 | Aroctor-1248 | 150 | U | |
| 11097-69-1 | Arocior-1254 | 230 | | |
| 11096-82-5 | Aroclor-1260 | 150 | U | |

| | | | | | | K40576 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345535 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 03/05/98 | | |
| % Solids: | 100 CFC 418198 | | | Sulfur Clean-up: | Y | n | //N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | i U | |
| 11104-28-2 | Arocior-1221 | 50 | U | |
| 11141-16-5 | Aroclor-1232 | 50 | U | |
| 53469-21-9 | Aroclor-1242 | 50 | U | |
| 12672-29-6 | Aroclor-1248 | 180 | | |
| 11097-69-1 | Aroctor-1254 | 140 | | |
| 11096-82-5 | Aroctor-1260 | 34 | J | |

| | | | | | K40577 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345536 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KRC 418/98 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Aroclor-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 50 | U |
| 12672-29-6 | Arocior-1248 | 140 | i |
| 11097-69-1 | Arocior-1254 | 150 | |
| 11096-82-5 | Aroclor-1260 | 31 | J |



EPA SAMPLE NO.

| | K40578 | |
|---------|--------|--|
| SDG: | FISH04 | |
| 345537 | | |
| 10/23/9 | 7 | |

| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | |
|-------------------|-------------------|------|-----------|------------------|----------|-------------|
| · Contract: | 91082 | | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345537 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 KRC 418198 | , | | Sulfur Clean-up: | Y | (Y/N) |
| | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|----------------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Aroclor-1242 | 130 | |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroctor-1254 | 250 | |
| 11096-82-5 | Arocior-1260 | 50 | - U |

200152

EPA SAMPLE NO.

Y

(Y/N)

K40579 ITS Environmental Lab Code: INCHVT Lab Name: 91082 PCB SDG: FISH04 Case: Contract: BIOTA 345538 Lab Sample ID: Phase Type: 10/23/97 10.0 (g) Date Received: Phase Weight: 1.0 (uL) 02/23/98 Date Extracted: Injection Volume: 03/05/98 1.0 Date Analyzed: **Dilution Factor:** 186 KRL 418198

% Solids:

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | U | |
| 11104-28-2 | Arocior-1221 | 50 | U | |
| 11141-16-5 | Aroclor-1232 | 50 | U | |
| 53469-21-9 | Arocior-1242 | 50 | U | |
| 12672-29-6 | Arocior-1248 | 98 | | |
| 11097-69-1 | Aroclor-1254 | 170 | | |
| 11096-82-5 | Aroclor-1260 | 33 | J | |

Sulfur Clean-up:

0001

| | | | | | K40580 | | |
|-------------------|-------------------|------|---------|------------------|----------|--------|--|
| Lab Name: | ITS Environmental | لما | b Code: | INCHVT | | | |
| Contract: | 91082 | • | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | вюта | | | Lab Sample ID: | 345539 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 03/05/98 | | |
| % Solids: | 100 KR 418198 | | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Arocior-1232 | 50 | U |
| 53469-21-9 | Arocior-1242 | 50 | J |
| 12672-29-6 | Aroclor-1248 | 50 | U |
| 11097-69-1 | Aroclor-1254 | 110 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

| | | | | | K40581 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | РСВ | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345540 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 100 Kle 4/8/98 | • | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | U |
| 11104-28-2 | Arocior-1221 | 50 | U |
| 11141-16-5 | Aroclor-1232 | . 50 | U |
| 53469-21-9 | Aroctor-1242 | 50 | u |
| 12672-29-6 | Arocior-1248 | 150 | |
| 11097-69-1 | Aroclor-1254 | 160 | |
| 11096-82-5 | Aroclor-1260 | 50 | U |

EPA SAMPLE NO.

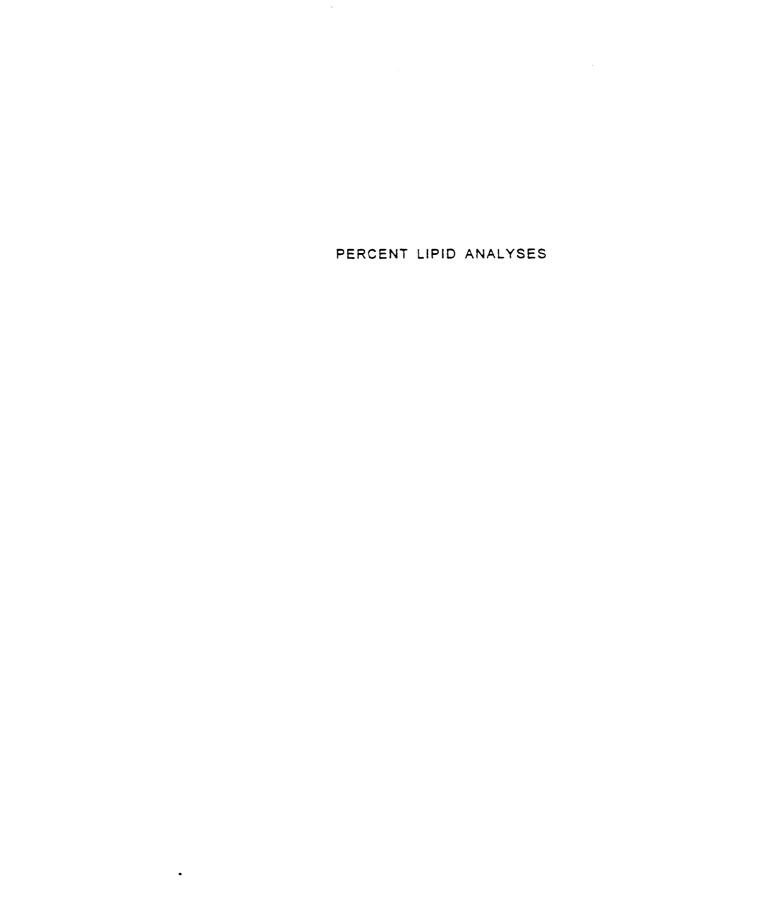
| | | | | K | 40581MS |
|-------------------|-------------------|-----------|------------------|----------|--|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract | 91082 | Case: | PCB | SDG: | FISH04 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345540MS | <u>. </u> |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 02/23/98 | |
| Dilution Factor: | 10.0 | | Date Analyzed: | 03/05/98 | |
| % Solids: | 108 KRC 418198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500 | U |
| 11104-28-2 | Aroclor-1221 | 500 | U |
| 11141-16-5 | Arocior-1232 | 500 | U |
| 53469-21-9 | Arocior-1242 | 6100 | |
| 12672-29-6 | Aroclor-1248 | 500 | U |
| 11097-69-1 | Aroclor-1254 | 6200 | |
| 11096-82-5 | Aroclor-1260 | 500 | U |

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| | | | | | K405B1MSD | | |
|------------------|-------------------|------|-------|------------------|-----------|----------|---|
| Lab Name: | ITS Environmental | Lab | Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH04 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345540 M |) | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 02/23/98 | | |
| Dilution Factor: | 10.0 | | | Date Analyzed: | 03/05/98 | | |
| % Solids: | 100 KR 4/8/98 | | | Sulfur Clean-up: | Y | (Y/N) |) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIÉR | |
|------------|--------------|--------------------------|--------------|--|
| 12674-11-2 | Aroclor-1016 | 500 | l U | |
| 11104-28-2 | Aracior-1221 | 500 | U | |
| 11141-16-5 | Aroclor-1232 | 500 | U | |
| 53469-21-9 | Arocior-1242 | 5400 | | |
| 12672-29-6 | Aroclar-1248 | 500 | U | |
| 11097-69-1 | Arocior-1254 | 5500 | | |
| 11096-82-5 | Aroclor-1260 | 500 | u | |



Percent Lipids Results

| 1 125 15 | Matrix | Result |
|----------|--|---|
| 1 | | |
| | | 2.3% |
| 345523 | tissue | 1.5% |
| 345524 | tissue | 2 4% |
| 345525 | tissue | 2.9% |
| 345526 | tissue | 2 2% |
| 345527 | tissue | 3 2% |
| 345528 | tissue | 0.6% |
| 345529 | tissue | 0.2% |
| 345530 | tissue | 0.4% |
| 345531 | tissue | 0.3% |
| 345532 | tissue | 0.4% |
| 345533 | tissue | 0.3% |
| 345534 | tissue | 0.5% |
| 345535 | tissue | 0.6% |
| 345536 | tissue | 0.4% |
| 345537 | tissue | 0.7% |
| 345538 | tissue | 0.3% |
| 345539 | tissue | 0.4% |
| 345540 | tissue | 0.4% |
| | | |
| | | |
| | | |
| | | |
| | 345525 345526 345527 345528 345529 345530 345531 345532 345533 345533 345534 345535 345536 345537 345538 345538 | 345522 tissue 345523 tissue 345524 tissue 345525 tissue 345526 tissue 345527 tissue 345528 tissue 345529 tissue 345530 tissue 345531 tissue 345532 tissue 345533 tissue 345534 tissue 345535 tissue 345536 tissue 345537 tissue 345538 tissue 345539 tissue |

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4. Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40506. K40512 and K40515. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. Recovery for both surrogates were above control limits in the extraction blank. Since surrogate recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation. Surrogates were diluted beyond the range of detection in sample K40509. No data has been qualified based on diluted surrogates.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the quidelines listed in the analytical method.



PCB Data Review Checklist

| | YES | NO | NA NA |
|--|-----|-------------|-------------|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | X | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u>X</u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | X | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | X | | |
| If yes, were the samples reanalyzed? | | <u> </u> | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | | <u> </u> | |
| Were matrix spikes analyzed at the required frequency? | | X | |
| How many spike recoveries were outside of QC limits? | | | |
| NA out of NA | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| NA out of NA | | | |
| <u>Blanks</u> | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | X | |
| Do any field/rinse blanks have positive results? | | - | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|----------|-------------|----|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | <u> </u> | | |
| Aroclor 1221 | <u> </u> | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | x | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | X | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | <u>X</u> | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | x | | |
| Do the combined column and individual column Aroclor identifications agree? | x_ | | |
| Were there any false negatives? | | X | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA. |
|--|----------|----|---|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limits | <u> </u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | *************************************** |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surro | gates |
|-----------|--------------|-------|-------|
| | | TCX | DCB |
| K40500 | +5 | | |
| K40502 | +5 | | |
| K40503C | +5 | | |
| K40506 | +5 | | |
| K40507 | +5 | | |
| K40508K | +5 | | |
| K40509 | +5 | D | D |
| K40511 | +5 | | |
| K40512 | +5 | 4 | |
| K40513 | +5 | | |
| K40514 | +5 | | |
| K40515 | +5 | • | |
| K40516 | +5 | | |
| K40504-C1 | +5 | | |
| K40504-C2 | +5 | | |
| K40504-C | +5 | | |
| K40517-C | +10 | | |
| K40518-C | +10 | | |
| K40519-C | +10 | | |
| K40520-C | +10 | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high

Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

| Date: | 1/28/98- | 1/30/98 | 1/30/98 | 1/31 | 1/31 | 1/31 | 1/31 | 1/31 |
|----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|--------------|--------------|
| Time: | 1/29/98 | 2118 | 2145 | 2156 | 0337 | 0902 | 0929 | 130 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont Cal. | Cont. Çal |
| | %RSD | %D | %D | % D | %D | %D | %D_ | % D |
| Aroclor 1016 | ok | | | | | | | |
| Arocior 1221 | ak | | | | | | | |
| Aroctor 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | ok | | | | | |
| Arocior 1248 | ok | ok | | ok | | ok | | ok |
| Aroclor 1254 | ok | | | | ok | | | |
| Arocior 1260 | ok | | | | | | ok | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: <u>RTX-35</u> / RTX-5

| Date: | 1/28/98- | 1/31/98 | | | | | | |
|----------------------|-----------------|---------------|---------------|---------------|---------------|--------------|--|--------------|
| Time: | 1/29/98 | 1334 | | | | | | |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. | Cont Cal |
| | %RSD | %D | % D | %D | %D_ | % D | % D | %0 |
| Arocior 1016 | ok | | | | | | | |
| Arociar 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Aroclor 1242 | ok_ | ok | | | | | | |
| Arocior 1248 | ok | | | | | | | |
| Arocior 1254 | ok | | | | | | | |
| Arocior 1260 | ok | | | | | | | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiphenyl | ok_ | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date: | 2/04/98- | 2/05/98 | 2/05/98 | | | | | <u> </u> |
|----------------------|-----------------|--------------|---------------|---------------|---------------|--------------|---------------|-------------|
| Time. | 2/05/98 | 1308 | 1335 | | | | | |
| | Initial Cal. | Cont. Cal | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. | Cont Cal |
| | %RSD | % D | %D | % D | %D | %D | %D | % C |
| Aroclor 1016 | ok | | | | ļ | | | <u> </u> |
| Aroclor 1221 | ок | | | | | | | |
| Arocior 1232 | ok | | | | | <u> </u> | | |
| Aroclar 1242 | ok_ | | ok | ļ | | | | <u> </u> |
| Arocior 1248 | ok | ok | | | | | | ļ |
| Arocior 1254 | ok | | | | | | | |
| Arocior 1260 | ok | | | | | | | |
| Tetrachioro-m-xylene | ok | | | | | <u> </u> | | |
| Decachlorobiphenyl | ok | | | | | | | <u> </u> |
| Affected Samples: | | | | | | | ļ | |
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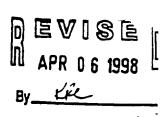


| | | | | | | K40500 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345205 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 K 108 | - | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | 674-11-2 Aroclor-1016 104-28-2 Aroclor-1221 141-16-5 Aroclor-1232 469-21-9 Aroclor-1242 672-29-6 Aroclor-1248 | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|---|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100 | 1 1 12 |
| 11104-28-2 | Arocior-1221 | 100 | R M |
| 11141-16-5 | Arocior-1232 | 100 | W W |
| 53469-21-9 | Aroclor-1242 | 100 | D) 4 |
| 12672-29-6 | Aroclor-1248 | 330 | 7 |
| 11097-69-1 | Aroclor-1254 | 450 | 7 |
| 11096-82-5 | Aroclor-1260 | 94 | J |

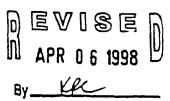
| | | | | | K40502 | |
|-------------------|-------------------------------|----------------------------------|---|------------------------|--|--|
| ITS Environmental | | Lab Code: | INCHVT | | | |
| 91082 | _ | Case: | PCB | SDG: | FISH01 | |
| BIOTA | _ | | Lab Sample ID: | 345207 | | |
| 10.0 | (g) | | Date Received: | 10/16/97 | | |
| 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| 1.0 | - | | Date Analyzed: | 0 1/3 1/98 | | |
| 100 | _ | | Sulfur Clean-up: | Y | | (Y/N) |
| | 91082 BIOTA 10.0 1.0 | 91082 BIOTA 10.0 (g) 1.0 (uL) | 91082 Case: BIOTA 10.0 (g) 1.0 (uL) 1.0 | BIOTA Lab Sample ID: | ITS Environmental Lab Code: INCHVT | 91082 Case: PCB SDG: FISH01 BIOTA Lab Sample ID: 345207 10.0 (g) Date Received: 10/16/97 1.0 (uL) Date Extracted: 12/17/97 1.0 Date Analyzed: 01/31/98 |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroctor-1016 | 50 | N 12 | |
| 11104-28-2 | Arocior-1221 | 50 | 1 R 1/2 | |
| 11141-16-5 | Aroclor-1232 | 50 | TW W | |
| 53469-21-9 | Arocior-1242 | 50 | The Mark | |
| 12672-29-6 | Arocior-1248 | 290 | | |
| 11097-69-1 | Aroclor-1254 | 330 | J | |
| 11096-82-5 | Aroclor-1260 | 59 | 7 | |



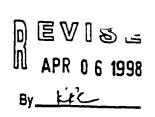
| | | | | | | K40503C | | |
|-------------------|-------------------|----------|-----------|------------------|----------|---------|-------|--|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | | |
| Contract: | 91082 | <u>-</u> | Case: | PCB | SDG: | FISH01 | | |
| Phase Type: | вюта | _ | | Lab Sample ID: | 345208 | | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 01/31/98 | | • | |
| % Solids: | satisfy thinks | _ | | Sulfur Clean-up: | Y | | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION . (ug/Kg) | QUALIFIER | |
|------------|--------------|----------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 100 | I 42 | |
| 11104-28-2 | Arocior-1221 | 100 | TW W | |
| 11141-16-5 | Aroclor-1232 | 100 | Th 102 | |
| 53469-21-9 | Aroclor-1242 | 100 | 1 W | |
| 12672-29-6 | Arocior-1248 | 100 | EN R | |
| 11097-69-1 | Arocior-1254 | 1000 | 7 | |
| 11096-82-5 | Aroctor-1260 | 97 | J | |



| | | | | | K40506 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | ! | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345209 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 10.0 | _ | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 MULLIN | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 500 | W 45 | |
| 11104-28-2 | Aroctor-1221 | 500 | 72 4 | |
| 11141-16-5 | Aroclor-1232 | 500 | 4 10 | |
| 53469-21-9 | Aroclor-1242 | 500 | A 12 | |
| 12672-29-6 | Arocior-1248 | 500 | # | |
| 11097-69-1 | Arocior-1254 | 3200 | 7 | |
| 11096-82-5 | Arociar-1260 | 290 | 1 | |

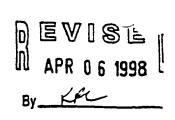


| | | | | | 1 1 1 1 | K40507 |
|-------------------|-------------------|------|-----------|------------------|------------------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | _ | Case: | РСВ | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345210 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 0 1/3 1/98 | |
| % Solids: | 100 ax | - | | Sulfur Clean-up: | Υ | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 100 | # M2 | |
| 11104-28-2 | Aroclor-1221 | 100 | בט ע | |
| 11141-16-5 | Aroclor-1232 | 100 | 8 W | |
| 53469-21-9 | Arocior-1242 | 100 | 1 W | |
| 12672-29-6 | Arocior-1248 | 470 | 1 2 | |
| 11097-69-1 | Arocior-1254 | 630 | 7 | |
| 11096-82-5 | Arociar-1260 | 180 | 7, | |

| | | | | | | K40508 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISHOT | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345211 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 10.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 106/14/08 | - | | Sulfur Clean-up: | Y | () | Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-------------|--|
| 12674-11-2 | Aroclor-1016 | 500 | 1 4 VC7 | |
| 11104-28-2 | Arocior-1221 | 500 | 4 67 | |
| 11141-16-5 | Arocior-1232 | 500 | W W | |
| 53469-21-9 | Arocior-1242 | 500 | 1 N | |
| 12672-29-6 | Arocior-1248 | 500 | · · | |
| 11097-69-1 | Arocior-1254 | 4900 | | |
| 11096-82-5 | Arocior-1260 | 1600 | 7 | |



| | | | | | | K40509 | |
|------------------|-------------------|--------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 | |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345212 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 20.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 200 er 108 | - - | | Sulfur Clean-up: | Y | (Y | r/N) |
| | | | | | | | |

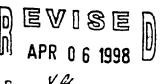
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 1000 | W # 120 | |
| 11104-28-2 | Aroclor-1221 | 1000 | \$ W | |
| 11141-16-5 | Aroclor-1232 | 1000 | A 12 | |
| 53469-21-9 | Arocior-1242 | 3000 | 1 3 | |
| 12672-29-6 | Aroctor-1248 | 1000 | R W | |
| 11097-69-1 | Aroclor-1254 | 13000 | 7 | |
| 11096-82-5 | Arocior-1260 | 1300 | 7 | |

| | | | | 1 | K40511 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345214 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 5.0 | _ | Date Analyzed: | 01/31/98 | |
| % Solids: | south as | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 250 | A M | |
| 11104-28-2 | Aroclor-1221 | 250 | TV 43 | |
| 11141-16-5 | Aroclor-1232 | 250 | W 40 | |
| 53469-21-9 | Aroclor-1242 | 250 | X ,- | |
| 12672-29-6 | Aroclor-1248 | 1100 | | |
| 11097-69-1 | Aroclor-1254 | 1500 | 7. | |
| 11096-82-5 | Aroclor-1260 | 340 | 7 | |

| | | | | | | K40512 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | |
| Contract: | 91082 | ~ | Case: | РСВ | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345215 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 10.0 | _ | | Date Analyzed: | 01/31/98 | |
| % Solids: | 108 pt 108 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 500 | 4 WZ | |
| 11104-28-2 | Aroclor-1221 | 500 | R 12 | |
| 11141-16-5 | Aroclor-1232 | 500 | 1 U | |
| 53469-21-9 | Aroctor-1242 | 500 | W 15 | |
| 12672-29-6 | Aroctor-1248 | 500 | 1 u | |
| 11097-69-1 | Aroctor-1254 | 5200 | 1 . 3 | |
| 11096-82-5 | Aroclar-1260 | 810 | 3 | |



| | | | | | K40513 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | | Lab Sample IO: | 345216 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 01/31/98 | |
| % Solids: | 100 th set | - - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|-----|
| 12674-11-2 | Aroclor-1016 | 50 | F. | US |
| 11104-28-2 | Aroclor-1221 | 50 | ४ | 47 |
| 11141-16-5 | Arocior-1232 | 50 | l Hr | 7.7 |
| 53469-21-9 | Aroctor-1242 | 50 | ¥ | w |
| 12672-29-6 | Aroctor-1248 | 330 | | |
| 11097-69-1 | Aroclor-1254 | 310 | | D |
| 11096-82-5 | Aroclor-1260 | 80 | | 7. |



| | | | | | K40514 | |
|-------------------|-------------------|----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | Lab Code | : INCHVT | <u> </u> | | |
| Contract: | 91082 | _ Case | e: PCB | SDG: | FISH01 | - |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345217 | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 01/31/98 | | |
| % Solids: | redu va | _ | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50 | 1 8 W |
| 11104-28-2 | Arocior-1221 | 50 | 1 W U |
| 11141-16-5 | Aroclor-1232 | 50 | 1 4 |
| 53469-21-9 | Arocior-1242 | 50 | ¥ (, |
| 12672-29-6 | Arocior-1248 | 530 | |
| 11097-69-1 | Arocior-1254 | 370 | |
| 11096-82-5 | Arocior-1260 | 71 | |

| | | | | | | K40515 | |
|-------------------|-------------------|------|-----------|------------------|----------|-------------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | _ |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345218 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 10.0 | _ | | Date Analyzed: | 01/31/98 | | |
| % Solids: | 100 ct ins | | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 500 | R M | |
| 11104-28-2 | Arocior-1221 | 500 | V W | |
| 11141-16-5 | Aroctor-1232 | 500 | 4 6 | |
| 53469-21-9 | Aroctor-1242 | 500 | ٠ - الله | |
| 12672-29-6 | Arocior-1248 | 1500 | | |
| 11097-69-1 | Aroclor-1254 | 2100 | T | |
| 11096-82-5 | Arocior-1260 | 560 | 7 | |

| | | | | | | K40516 | | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH01 | | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345219 | | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/16/97 | | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 01/31/98 | | | |
| % Solids: | 100 pt 198 | - | | Sulfur Clean-up: | Y | (| (Y/N) | |
| | | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 250 | W # W | |
| 11104-28-2 | Arocior-1221 | 250 | 1 4 0 | |
| 11141-16-5 | Arocior-1232 | 250 | 1 4 UT | |
| 53469-21-9 | Aroclor-1242 | 250 | y 4 | |
| 12672-29-6 | Arocior-1248 | 250 | ب بر | |
| 11097-69-1 | Aroclor-1254 | 2000 | 7 | |
| 11096-82-5 | Arocior-1260 | 350 | 7 | |

| | | | | K40504-C | • |
|------------------|-------------------|-----------|------------------|------------|-------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PC8 | SDG: FISHO | 1 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345420 | _ |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | _ |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | _ |
| Dilution Factor: | 3.0 | _ | Date Analyzed: | 01/31/98 | _ |
| % Solids: | 100 se, 48 | _ | Sulfur Clean-up: | Y | (Y/N) |
| | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|---|--|
| 12674-11-2 | Aroclor-1016 | 150 | 1 W | |
| 11104-28-2 | Arocior-1221 | 150 | 1 1 1 | |
| 11141-16-5 | Arocior-1232 | 150 | K W | |
| 53469-21-9 | Aracior-1242 | 150 | 8 4 | |
| 12672-29-6 | Aroctor-1248 | 590 | ======================================= | |
| 11097-69-1 | Aroclor-1254 | 700 | 3 | |
| 11096-82-5 | Arocior-1260 | 150 | 7 | |

| | | | | к | 40517-C |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345421 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/05/98 | |
| % Solids: | 196 pt 108 | - - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | - Ju 4 | |
| 11104-28-2 | Arocior-1221 | 50 | 1 W | |
| 11141-16-5 | Aroclor-1232 | 50 | 12 V | |
| 53469-21-9 | Arocior-1242 | 50 | 7. V | |
| 12672-29-6 | Aroclor-1248 | 50 | 4 4 | |
| 11097-69-1 | Aroclor-1254 | 200 | 7 | |
| 11096-82-5 | Arocior-1260 | 39 | J | |

| | | | | к | 40518-C |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | _ Case: | PCB | SDG: | FISH01 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345422 | |
| Phase Weight: | 10.0 | _ (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) - | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/05/98 | |
| % Solids: | 100,00 KIN | . | Sulfur Clean-up: | Y | (Y/N) |

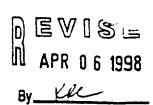
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|------------|------------|
| 12674-11-2 | Arocior-1016 | 50 | <u> لا</u> | 47 |
| 11104-28-2 | Arocior-1221 | 50 | <u> </u> | W |
| 11141-16-5 | Arocior-1232 | 50 | 4 | CN CN |
| 53469-21-9 | Arocior-1242 | 50 | 74 | ٠ ᠸ- |
| 12672-29-6 | Aroctor-1248 | 50 | T. | 7 |
| 11097-69-1 | Arocior-1254 | 310 | | . <u> </u> |
| 11096-82-5 | Arocior-1260 | 58 | | 7. |

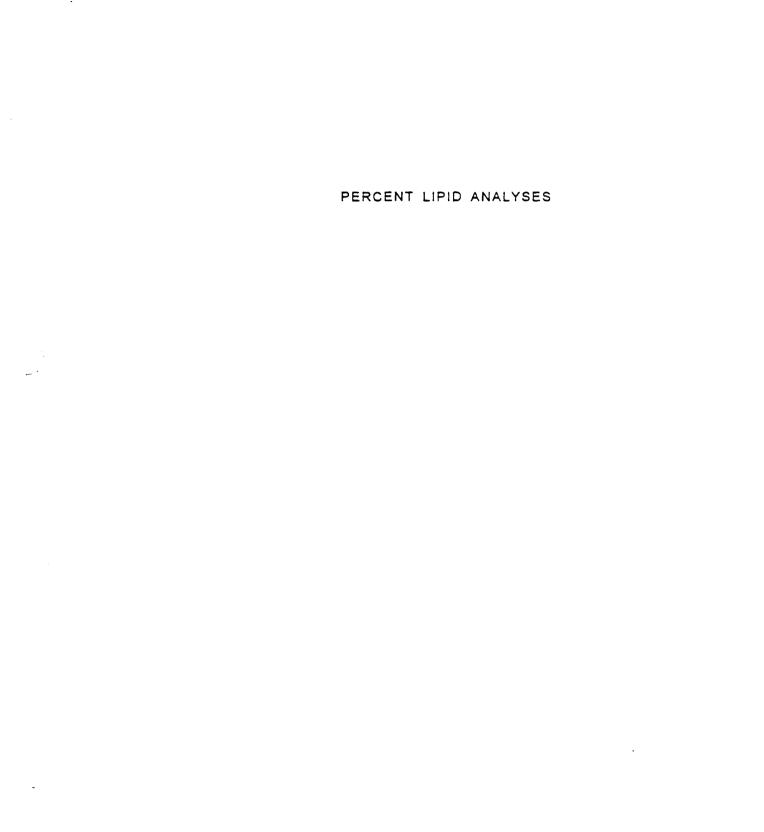
| | | | | | , | K40519-C | |
|------------------|-------------------|--------------|-----------|------------------|----------|----------|--|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | | Case: | PC8 | SDG: | FISH01 | |
| Phase Type: | BIOTA | - | | Lab Sample ID: | 345423 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/05/98 | | |
| % Solids: | 200 che 108 | _ | | Sulfur Clean-up: | Y | (Y/N) | |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 50 | x 1/2 |
| 11104-28-2 | Aroclor-1221 | 50 | TW # |
| 11141-16-5 | Aroclor-1232 | 50 | TU 45 |
| 53469-21-9 | Arocior-1242 | 50 | 14 V |
| 12672-29-6 | Arocior-1248 | 50 | 4 3 |
| 11097-69-1 | Arocior-1254 | 230 | 7 |
| 11096-82-5 | Aroclor-1260 | 43 | J |
| | | | |

| | | | | | , | K40520-C | |
|------------------|-------------------|----------|-----------|------------------|----------|----------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: _ | FISH01 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345424 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/05/98 | | |
| % Solids: | 100 pc 10198 | <u>-</u> | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|---------------|
| 12674-11-2 | Aroclor-1016 | 50 | B WT |
| 11104-28-2 | Aroctor-1221 | 50 | I W |
| 11141-16-5 | Aroctor-1232 | 50 | Tu & |
| 53469-21-9 | Aroclor-1242 | 50 | حرا كلا |
| 12672-29-6 | Aroctor-1248 | 50 | 11 |
| 11097-69-1 | Arocior-1254 | 210 | 7 |
| 11096-82-5 | Arociar-1260 | 36 | J |





Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result [*] |
|-----------|--------|-------------|---------------------|
| K40500 | 345205 | tissue | 0.5% |
| K40502 | 345207 | tissue | 0.6% |
| K40503C | 345208 | tissue | . 0% |
| K40506 | 345209 | tissue | 16 7% |
| K40507 | 345210 | tissue | 2.1% |
| K40508K | 345211 | tissue | 3.6% |
| K40509 | 345212 | tissue | 10.3% |
| K40511 | 345214 | tissue | 4.2% |
| K40512 | 345215 | tissue | 3.5% |
| K40513 | 345216 | tissue | 5 4% |
| K40514 | 345217 | tissue | 2.8% |
| K40515 | 345218 | tissue | 5.5% |
| K40516 | 345219 | tissue | 1.3% |
| K40504-C | 345420 | tissue | 2.1% |
| K40517-C | 345421 | tissue | 0.4% |
| K40518-C | 345422 | tissue | 0.5% |
| K40519-C | 345423 | tissue | 0.6% |
| K40520-C | 345424 | tissue | 0.6% |
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BLASLAND & BOUCK SHOINTERS, P.C.

| 2001.00 | | | | | | CHAI | V OF | cus | TODY | RE | con | D | , | | |
|-------------------------------------|----------|----------------|---------------|---------------------|------------------------------|--|----------|------------------|-------|------------|-------|---------|----------|---------|---|
| PROJ. NO. LYSQU'TIJ SAMPLERS: | | MOJEC Kelam | | | Non-Rosidad | Fish | | NO OF CON- | 3/2 | r / χ | Ard S | | | | REMARKS |
| STA. NO. D | ATE | TIME | 8 | CAAB | BTATIC | IN LOCATION | | INERS | | 263 | 6 m | | / | / | |
| 40500 10 K40501 | 1452 | 131> | | メイン | New Richmond | - A83A#11 | | | X | 4 | | | | | Fillet and analyze tollowing analytical procedures |
| K40503 C Q504-C1 | | | X X | 1 | | | | | | | | _ | _ | | Analyze whole-banky composite as directed above. Retain For combination Wadditional Simples |
| 10512 40513 - | - | | _ | - ح | | Line and the second | | | | | | | 1550 | | Levelyne brown evelyne |
| 40516 | _ | | _ | | | | - | | | - | _ | | _ | | |
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| Relinguished b | Y . 19 | malura) | | | Date / Time | Received by: /Signature | <u> </u> | | Relia | iquish | ed by | ·: 1810 | | | Date / Time Received by: (5)(property) |
| Relinquished E | <u> </u> | gaetoral | | 10 | /15/57 17:50 Date / Time | Received by: /Signature | 1 | | Relin | quith | ed by | : ISip | 1010 | j | Date / Time Received by: [Signature] |
| Relingulihed b |)Y: /S:/ | | | | Date / Time | Received for Laborato (5.0/0/live) (15.0/0/live) (15.0/0/live) (15.0/0/live) (16.0/0/live) | 2/1 | NO | IØ, | 14/7 | 110 | | 1 | mark | |
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| | LON9 | NO. 1 | ROJEC | TNA | ME | | | | Γ | | | | / | | | | 77 | 7 | |
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| | 1 | | [/] | | 137 | | | | 1 | Ur | 13 | 5/\ | W. | y | | | | | REMARKS |
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| | K40501 | | | | 7 | | <u> </u> | | | 1 | | | | | | | chsexised | Dre XIZO | ib/ |
| | K40502 | | | | Y | <u> </u> | | \ | | 1 | | | | | | | | | |
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| | 40512 | | | Ľ | X | | | 1 | | <u></u> | | | | | | | | | e Pallowing coulphul |
| ĸ | 40513 | | | | | | / | | | ļ | | | | | | | Gracedila | خعدات | ray band |
| K | 40514 | | | | | | | | | L | | | _ | | | | <u>r</u> | 1 | \ \ \ |
| K | 40515 | | | | | | | | | | | | | | _ | _ | ,,,, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,, | | |
| K | 40516 | | | | 1 | | | | _ | <u></u> | | | | | _ | | | <u>مل</u> | |
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| ļ | Relingue | d by: H | Jon Aurel | | T | Date | / Time | Received by: Isometure | , | | Relin | quish | ed by | : 15.0 | 201010 | , | Date | / Time | Received by: (Signature) |
| ł | | 76/2 | | | 1, | 415/57 | 17:6 | | | | | | | | | | | ł | |
| 1 | Relinquish | ld by: Is | ignoruro) | | +" | | / Time | Received by: (Signature) | , | | Relin | quish | ed by | : 15.p | 1010/0 | , | Date | / Time | Received by: (Signature) |
| | | | | | | | | | | | | | | | | | | | |
| Í | Relinquish | ed by: // | ignatural | | - - | Dete | /Time | Received for Laborator | у Бу | ! : | Ϊ | Date | /Tim | 70 | n. | mark | | I | <u> </u> |
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| (| | | Distr | the sta | _ <u></u> | pod Acto | memin 1 | nigment; Copy to Coord-nat | <u> </u> | 014 F401 | LIK | 19! | | حورا | 7 | | | | |
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MASLAND & BOUCK INDINSIRS, P.C.

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6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

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| K40524 | | | | + | | - | - | - | - | [- | - | scules-on filsels) | |
| K40525 | | | _ | | i | - <i> </i> | H | - | - | - | | | |
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DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH02

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review pe formed by:



Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH02 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sheets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

| ł | Lab ID | Matrix | Sampling Date | Analyses | | | | | |
|-----------|--------|--------|------------------|----------|--------------|-----|--------------|--------|--|
| Sample ID | | | | VOA | BNA | PCB | TAL | %LIPID | |
| K40521 | 345425 | tissue | 10/15/97 | | | x | | x | |
| K40522 | 345426 | tissue | 10/15/97 | | | × | | × | |
| K40523* | 345427 | tissue | 10/15/97 | | | × | | x | |
| K40525 | 345429 | tissue | 10/15/97 | | | x | | x | |
| K40526 | 345430 | tissue | 10/15/97 | | | x | | x | |
| K40527 | 345431 | tissue | 10/15/97 | | | × | | x | |
| K40528 | 345432 | tissue | 10/15/97 | | | x | | x | |
| K40529 | 345433 | tissue | 10/15/97 | | | × | | x | |
| K40530-C | 345434 | tissue | 10/15/97 | | | x | | × | |
| K40531-C | 345435 | tissue | 10/16/97 | | | × | | х | |
| K40532-C | 345436 | tissue | 10/16/97 | | | x | | × | |
| K40533-C | 345437 | tissue | 10/16/97 | ļ | | × | | x | |
| K40535 | 345438 | tissue | 10/17/97 | | | х | <u> </u> | x | |
| K40536 | 345439 | tissue | 10/17/97 | | | x | <u> </u> | × | |
| K40537 | 345440 | tissue | 10/17/97 | | | x | | x | |
| K40538 | 345441 | tissue | 10/17/97 | | | × | | x | |
| K40539 | 345442 | tissue | 10/17/97 | | | x | | x | |
| K40540 | 345443 | tissue | 10/17/97 | - | | × | | x | |
| | | | | - | <u> </u> | | | | |
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MS/MSD performed on sample

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples except K40523, K40523MS and K402523MSD were analyzed beyond the specified holding time. Based on the deviation, data for all samples except K40523, K40523MS and K40523MSD have been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4 Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for both surrogates were above control limits in the extraction blank. Since recoveries for all samples associated with the blank were acceptable, no action has been taken based on the deviation.

All other surrogate recoveries were within control limits.

6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

All matrix spike and matrix spike duplicate recoveries and relative percent differences between recoveries were within control limits. All matrix spike blank recoveries were also within control limits.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.

DATA REVIEW CHECKLIST

PCB Data Review Checklist

| | YES | NO | NA_ |
|--|----------|-------------|-----|
| Data Completeness and Deliverables | | | |
| Is there a narrative or cover letter present? | X | | |
| Are the sample numbers included in the narrative? | X | | |
| Are the sample chain-of-custodies present? | <u> </u> | | |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition? | | <u>X</u> | |
| Holding Times | | | |
| Have any holding times been exceeded? | X | | |
| Surrogate Recovery | | | |
| Are surrogate recovery forms present? | X | | |
| Are all the samples listed on the appropriate surrogate recovery form? | x | | |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank? | x | | |
| If yes, were the samples reanalyzed? | | X | |
| Matrix Spikes | | | |
| Is there a matrix spike recovery form present? | <u> </u> | | |
| Were matrix spikes analyzed at the required frequency? | X | | |
| How many spike recoveries were outside of QC limits? | | | |
| | | | |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits? | | | |
| | | | |
| <u>Blanks</u> | | | |
| is a Method Blank Summary Form present? | X | | |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X | | |
| Do any method/reagent/instrument blanks have positive results? | | <u> </u> | |
| Do any field/rinse blanks have positive results? | | | X |
| Are there field/rinse/equipment blanks associated with every sample? | | | X |

PCB Data Review Checklist - Page 2

| | YES | NO | NA |
|---|-------------|-------------|----|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Arocior 1221 | X | | |
| Aroclor 1232 | X | | |
| Aroclor 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | x | | - |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | x | | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | X | | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | | |
| Was the proper analytical sequence followed? | X | - | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroctor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | |
| Were there any false negatives? | | X | |
| | | | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA. |
|--|-----------|----|-----|
| Was GC/MS confirmation provided when required? | | | X |
| Compound Quantitation and Reported Detection Limi | <u>ts</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | X | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? |) | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surr | ogates |
|-----------|--------------|--------------|--------|
| | | TCX | DCB |
| K40521 | +28 | | |
| K40522 | +28 | | |
| K40523 | | | |
| K40523MS | | | |
| K40523MSD | | <u></u> | |
| K40525 | +28 | | |
| K40526 | +28 | | |
| K40527 | +28 | | |
| K40528 | +28 | | |
| K40529 | +28 | | |
| K40530-C | +28 | | |
| K40531-C | +28 | | |
| K40532-C | +28 | | |
| K40533-C | +28 | | |
| K40535 | +25 | | |
| K40536 | +25 | | |
| K40537 | +25 | | |
| K40538 | +25 | | |
| K40539 | +25 | | |
| K40540 | +25 | | |
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Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

|)ate | 2/04/98- | 2/05/98 | 2/05/98 | | | | |
|----------------------|-----------------|---------------|---------------|----------|------|----------|--|
| ime. | 2/05/98 | 1308 | 1335 | | | | |
| | Initial Cal. | Cont. Cai. | Cont. Cal. | | | | |
| | %RSD | %D | % D | | | | |
| Arocior 1016 | ok | | <u> </u> | | | | |
| Araciar 1221 | ok | | | <u> </u> | | | |
| Arocior 1232 | ok_ | | | | | | |
| Aroclor 1242 | ok_ | | ok | | | | |
| Arocior 1248 | ok | ok | | | | | |
| Aroclor 1254 | ok | | | | | | |
| Arocior 1260 | ok | | | | | | |
| Tetrachioro-m-xylene | ok | | | | | | |
| Decachlorobiphenyl | ok | | | | | <u> </u> | |
| Affected Samples: | | | | | | | |
| | | <u> </u> | | | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date: | 2/18/98- | 2/19/98 | 2/19/98 | 2/20 | 2/20 | 2/20 | 2/20 | 2/20 |
|----------------------|-----------------|---------|---------------|---------------|---------------|--------------|--|--------------|
| Time: | 2/19/98 | 1957 | 2023 | 0141 | 0207 | 1853_ | 1919 | 2251 |
| | Initial Cal. | Cont. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | Cont. Cal. | Cont Cal. |
| | %RSD | %D | %D | %D | %D | %D_ | %D | % D |
| Aroclor 1016 | ok | | | | | | | |
| Aroclor 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Aroclor 1242 | ok | | | | | | | |
| Arocior 1248 | ok | ok | | ok | | ok | | ok |
| Aroctor 1254 | ok | | ok | | | | | |
| Arocior 1260 | ok | | · | | ok | | ok | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachiorobiphenyl | ok | | | | | | | |
| Affected Samples: | | | | | | | | |
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PCB Calibration Summary - Page 3

Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date: | 2/18/98- | 2/20/98 | 2/23/98 | 2/23 | 2/23 | 2/23 | 2/23 | 2/23 |
|----------------------|-----------------|--------------|---------------|--------------|-------------|--------------|--------------|-------------|
| Time: | 2/19/98 | 2317 | 1202 | 1229 | 1745 | 1812 | 2329 | 2355 |
| | Initial Cal. | Cont. Cal | Cont. Cal. | Cont. Cal | Cont Cai | Cont. Cal | Cont Cal. | Cont Cai |
| | %RSD | %D | %0_ | % D | % D | % D | %D | %5 |
| Arocior 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Araciar 1232 | ok | | | | | | | ļ |
| Arocior 1242 | ok | ok | | | | | | ок |
| Arocior 1248 | ok | | ok | | ok_ | | oĸ | <u> </u> |
| Arocior 1254 | ok | | | ok | | | | <u> </u> |
| Aroclor 1260 | ok | | | | | ok | | |
| Tetrachioro-m-xylene | ok | | | | | | | |
| Decachlorobiohenvl | ok | | | | | ļ | | <u> </u> |
| Affected Samples: | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | |
| | | | | | | | | T- |

| CORRECTED ANALYSIS SUMMARY FORMS | |
|----------------------------------|--|
| | |
| | |
| | |

| | | | | | | K40521 | |
|------------------|-------------------|------|-----------|------------------|----------|----------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | <u> </u> | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | вюта | | | Lab Sample ID: | 345425 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | JOSEPH HIMS | _ | | Sulfur Clean-up: | Y | | Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|------------|
| 12674-11-2 | Aroclor-1016 | 50 | R | W |
| 11104-28-2 | Arocior-1221 | 50 | ا فلا | <u>u</u> 3 |
| 11141-16-5 | Arocior-1232 | 50 | 1 | Ü |
| 53469-21-9 | Aroctor-1242 | 50 | H. | Ü |
| 12672-29-6 | Aroclor-1248 | 50 | H. | W |
| 11097-69-1 | Arocior-1254 | 28 | J | |
| 11096-82-5 | Aroclor-1260 | 33 | J | |

EPA SAMPLE NO.

| | | | • | | | K40522 | |
|-------------------|-------------------|----------|-----------|------------------|----------|--------------|-------|
| Lab Name: | ITS Environmental | <u>-</u> | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: _ | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345426 | | _ |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | - |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | , | _ |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | ! | _ |
| % Solids: | 100 x 20 4) 7/44 | _ | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|----------|------------|
| 12674-11-2 | Arocior-1016 | 50 | 11 | w |
| 11104-28-2 | Arocior-1221 | 50 | ਰ | 2 |
| 11141-16-5 | Arocior-1232 | 50 | Th. | CD. |
| 53469-21-9 | Arocior-1242 | 50 | <u>₩</u> | w |
| 12672-29-6 | Arocior-1248 | 50 | tk. | <u>.</u> . |
| 11097-69-1 | Aroclor-1254 | 130 | | Ī |
| 11096-82-5 | Aroclor-1260 | 26 | J | |

15000

| | | | | | K40523 |
|-------------------|-------------------|-----------|------------------|----------|--------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | <u> </u> | |
| Contract: | 91082 | _ Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345427 | |
| Phase Weight: | 10.0 | _ (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 01/16/98 | |
| Dilution Factor: | 3.0 | _ | Date Analyzed: | 02/19/98 | - |
| % Solids: | 100 VA 41198 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|-------------------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 150 | U |
| 11104-28-2 | Aroclor-1221 | 150 | U |
| 11141-16-5 | Arocior-1232 | 150 | U |
| 53469-21-9 | Arocior-1242 | 150 | U |
| 12672-29-6 | Aroctor-1248 | 150 | บ |
| 11097-69-1 Aroclor-1254 | | 150 | Ü |
| 11096-82-5 | Aroctor-1260 | 150 | U |

| Dilution Factor: 1.0 Date Analyzed: 02/23/98 | | | | | • | | K40525 |
|---|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Phase Type: BIOTA Lab Sample ID: 345429 Phase Weight: 10.0 (g) Date Received: 10/18/97 Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/23/98 | Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | Ĺ | |
| Phase Weight: 10.0 (g) Date Received: 10/18/97 Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/23/98 | Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 |
| Injection Volume: 1.0 (uL) Date Extracted: 12/17/97 Dilution Factor: 1.0 Date Analyzed: 02/23/98 | Phase Type: | BIOTA | _ | | Lab Sample ID: | 345429 | |
| Dilution Factor: 1.0 Date Analyzed: 02/23/98 | Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Distriction (Letter). | Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| | Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/23/98 | |
| % Solids: 198 YA-4/198 Sulfur Clean-up: Y (Y/N) | % Solids: | 100 VA HIAR | _ | | Sulfur Clean-up: | Y | (Y/N) |

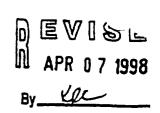
| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|----------|---------------|
| 12574-11-2 | Aroclor-1016 | 50 | K | E |
| 11104-28-2 | Arocior-1221 | 50 | ধ | 8 |
| 11141-16-5 | Arocior-1232 | 50 | F. | w |
| 53469-21-9 | Aroctor-1242 | 50 | A | ū |
| 12672-29-6 | Aroclor-1248 | 50 | 47 | ` |
| 11097-69-1 | Aroclor-1254 | 73 | | 75 |
| 11096-82-5 | Aroclor-1260 | 30 | J | |

| | | | | | K40526 |
|------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | L | |
| Contract: | 91082 | Case: | PC8 | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345430 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 th atting | _ | Suifur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--------------|
| 12674-11-2 | Aroclor-1016 | 50 | 1 8 | w |
| 11104-28-2 | Aroclor-1221 | 50 | R | a |
| 11141-16-5 | Aroclor-1232 | 50 | IJ | 2 |
| 53469-21-9 | Aroclor-1242 | 50 | خلا | a |
| 12672-29-6 | Aroclor-1248 | 50 | n | 3 |
| 11097-69-1 | Aroclor-1254 | 150 | | 7 |
| 11096-82-5 | Aroclar-1260 | 38 | J | |

| | | | | | K40527 | |
|-------------------|-------------------|-----------|------------------|----------|-------------|---|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 | • |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345431 | | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | | |
| injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100 VA 417191 | _ | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--------------------|
| 12574-11-2 | Aroclor-1016 | 50 | للد | T. |
| 11104-28-2 | Aroclor-1221 | 50 | 40 | B |
| 11141-16-5 | Aroclor-1232 | 50 | li li | W |
| 53469-21-9 | Aroclor-1242 | 50 | l l | , |
| 12672-29-6 | Aroclor-1248 | 50 | U. | |
| 11097-69-1 | Arocior-1254 | 280 | | $\widetilde{\tau}$ |
| 11096-82-5 | Aroclor-1260 | 83 | | 7: |



| | 0528 | K | | | | | |
|----|--------|----------------------------------|---|-----------|--------|-------------------|---|
| | | | INCHVT | Lab Code: | - | ITS Environmental | Lab Name: |
| | FISH02 | SDG: | PCB | Case: | _ | 91082 | Contract: |
| | | 345432 | Lab Sample ID: | | | BIOTA | Phase Type: |
| | | 10/18/97 | Date Received: | | (g) | 10.0 | Phase Weight: |
| | | 12/17/97 | Date Extracted: | | (uL) | 1.0 | njection Volume: |
| | | 02/23/98 | Date Analyzed: | | _ | 1.0 | Dilution Factor: |
| 1) | (Y/I | Y | Sulfur Clean-up: | | - - | 100 VR ALTIAY | % Solids: |
| 4 | (Y/I | 10/18/97 12/17/97 02/23/98 | Date Received: Date Extracted: Date Analyzed: | | - | 10.0 | Phase Weight: njection Volume: Dilution Factor: |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | * W | |
| 11104-28-2 | Aroclor-1221 | 50 | 4 12 | |
| 11141-16-5 | Arocior-1232 | 50 | 8 12 | |
| 53469-21-9 | Aroclor-1242 | 50 | R 102 | |
| 12672-29-6 | Aroclor-1248 | 50 | # 13 | |
| 11097-69-1 | Arocior-1254 | 120 | 2 | |
| 11096-82-5 | Aroclor-1260 | 35 | J | |

EPA SAMPLE NO.

| | | | | | (40529 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | <u> </u> | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345433 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 44 | | Sulfur Clean-up: | Y | (Y/N) |

% Solids:

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|-----------------------|------------|----|
| 12674-11-2 | Aroclor-1016 | 50 | म | 8 |
| 11104-28-2 | Arocior-1221 | 50 | <u> </u> | 9 |
| 11141-16-5 | Aroclor-1232 | 50 | 44 | 22 |
| 53469-21-9 | Aroclor-1242 | 50 | H- | a |
| 12672-29-6 | Arocior-1248 | 50 | Ft. | w |
| 11097-69-1 | Arocior-1254 | 110 | | 7 |
| 11096-82-5 | Aroclor-1260 | 50 | . U | Ü |

| | | | | | | (40530-C | |
|------------------|-------------------|------|-----------|------------------|----------|--------------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345434 | | _ |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/23/98 | | |
| % Solids: | 100-10-41-148 | - | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND CONCENTRATION (ug/Kg) | | QUALIFIER |
|------------|--------------------------------|-----|-----------|
| 12674-11-2 | Arocior-1016 | 150 | 7 K |
| 11104-28-2 | Aroclor-1221 | 150 | # L |
| 11141-16-5 | Aroclor-1232 | 150 | A 12 |
| 53469-21-9 | Arocior-1242 | 150 | ₩ Ú |
| 12672-29-6 | Aroclor-1248 | 480 | 2 |
| 11097-69-1 | Aroctor-1254 | 640 | 7 |
| 11096-82-5 | Aroclor-1260 | 150 | J V |

EPA SAMPLE NO.

| | | K40531-C | |
|-------------------|----------|----------|--------------|
| - - | SDG: | FISH02 | <u>ل</u> |
| D: _ | 345435 | | |
| ed: | 10/18/97 | · | |

| Contract: | 91082 | | Case: | РСВ | SDG: | FISH02 |
|-------------------|----------------|--------------|-------|------------------|----------|-------------|
| Phase Type: | BIOTA | - | | Lab Sample ID: | 345435 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | | | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 VR 41714 8 | _ | | Sulfur Clean-up: | Y | (Y/N) |
| _ | | _ | | | | |

Lab Code: INCHVT

Lab Name: ITS Environmental

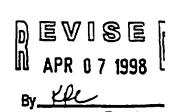
| CAS NO. 12574-11-2 11104-28-2 | COMPOUND CONCENTRATION (ug/Kg) | | QUALIFIER | |
|---------------------------------|--------------------------------|-----|-----------|----|
| 12574-11-2 | Aroclor-1016 | 150 | F. | u |
| 11104-28-2 | Arocior-1221 | 150 | الله | W |
| 11141-16-5 | Arocior-1232 | 150 | П | W |
| 53469-21-9 | Aroclor-1242 | 150 | ₩. | w |
| 12672-29-6 | Aroclor-1248 | 560 | | 77 |
| 11097-69-1 | Aroclor-1254 | 600 | | 7 |
| 11096-82-5 | Arocior-1260 | 140 | J | |

| | | | | | к | 40532-C |
|-------------------|-------------------|------|----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | _ | ab Code: | INCHVT | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH02 |
| Phase Type: | вюта | _ | | Lab Sample ID: | 345436 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/23/98 | |
| % Solids: | 100 VA 417/68 | _ | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 150 | 1 4 5 | |
| 11104-28-2 | Aroclor-1221 | 150 | T 45 | |
| 11141-16-5 | Arocior-1232 | 150 | 8 12 | |
| 53469-21-9 | Aroclor-1242 | 150 | R 12 | |
| 12672-29-6 | Aroclor-1248 | 560 | 7 | |
| 11097-69-1 | Aroclor-1254 | 780 | | |
| 11096-82-5 | Aroclor-1260 | 150 | S R | |

| | | | | K | 40533-C |
|------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345437 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| njection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 5.0 | _ | Date Analyzed: | 02/23/98 | |
| % Solids: | 200 Kke 198 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 250 | # 15 | |
| 11104-28-2 | Aroclor-1221 | 250 | ZJ 4L | |
| 11141-16-5 | Arocior-1232 | 250 | W W | |
| 53469-21-9 | Arocior-1242 | 250 | V W | |
| 12672-29-6 | Arocior-1248 | 1500 | | |
| 11097-69-1 | Arocior-1254 | 900 | 7 | |
| 11096-82-5 | Aroclor-1260 | 260 | 7 | |



| | | | | | | K40535 | | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|--|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | | | |
| Contract: | 91082 | | Case: | PC8 | SDG: | FISH02 | | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345438 | | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | _ | |
| Dilution Factor: | 5.0 | _ | | Date Analyzed: | 02/20/98 | | | |
| % Solids: | 100 th 148 | _ | | Sulfur Clean-up: | Y | | (Y/N) | |
| | | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|----|
| 12674-11-2 | Araclor-1016 | 250 | ŧ | 47 |
| 11104-28-2 | Aroclor-1221 | 250 | 11 | w |
| 11141-16-5 | Aroclor-1232 | 250 | ¥ | W |
| 53469-21-9 | Araclor-1242 | 250 | R | Ū. |
| 12672-29-6 | Aroclor-1248 | 600 | | 2 |
| 11097-69-1 | Aroclor-1254 | 700 | | 7 |
| 11096-82-5 | Arocior-1260 | 190 | J | |

EPA SAMPLE NO.

| | | | | | K40536 |
|-------------------|-------------------|--------------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | РСВ | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345439 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 100 VA H148 | - | Sulfur Clean-up: | Υ | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|------------|-------------------|
| 12674-11-2 | Aroclor-1016 | 50 | শ্ব | w |
| 11104-28-2 | Arocior-1221 | 50 | ى ر | w |
| 11141-16-5 | Aroclor-1232 | 50 | J. | W |
| 53469-21-9 | Aroclor-1242 | 50 | <u>и</u> | W |
| 12672-29-6 | Aroclor-1248 | 120 | | $\overline{\tau}$ |
| 11097-69-1 | Aroclor-1254 | 160 | | 77 |
| 11096-82-5 | Aroclor-1260 | 76 | | 7 |

000179

| | | | | | | K40537 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | · | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | ВІОТА | _ | | Lab Sample ID: | 345440 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 02/20/98 | | |
| % Solids: | 180 KR 417148 | _ | | Sulfur Clean-up: | Y | (| Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|----------------|----|
| 12674-11-2 | Aroclor-1016 | 100 | ¥ | W. |
| 11104-28-2 | Arocior-1221 | 100 | υ _ν | us |
| 11141-16-5 | Arocior-1232 | 100 | y | W |
| 53469-21-9 | Aroclar-1242 | 100 | U | w |
| 12672-29-6 | Aroclor-1248 | 100 | J. | W. |
| 11097-69-1 | Aroclor-1254 | 350 | | 75 |
| 11096-82-5 | Araclor-1260 | 95 | J | |

| | | | | 1 | K40538 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH02 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345441 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/20/98 | |
| % Solids: | 180 KR 41198 | - | Sulfur Clean-up: | Y | (YN) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|--------------|--|
| 12674-11-2 | Aroctor-1016 | 50 | 45 V | |
| 11104-28-2 | Aroclor-1221 | 50 | <u> </u> | |
| 11141-16-5 | Aroclor-1232 | 50 | ٧ لا | |
| 53469-21-9 | Arocior-1242 | 50 | IF O | |
| 12672-29-6 | Arocior-1248 | 130 | | |
| 11097-69-1 | Aroclor-1254 | 50 | 11 (s | |
| 11096-82-5 | Aroclor-1260 | 130 | | |

| | | | | | K40539 | | |
|------------------|-------------------|------|----------|------------------|----------|-------------|-----|
| Lab Name: | ITS Environmental | ا | ib Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345442 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 2.0 | _ | | Date Analyzed: | 02/20/98 | | |
| % Solids: | 100 KK 41198 | _ | | Sulfur Clean-up: | Y | (۲ | 7N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIE | R |
|------------|--------------|--------------------------|----------|-----|
| 12674-11-2 | Arocior-1016 | 100 | 44 | w |
| 11104-28-2 | Arocior-1221 | 100 | 4 | Œ |
| 11141-16-5 | Arocior-1232 | 100 | ন্ধ | U. |
| 53469-21-9 | Arocior-1242 | 100 | · L | W |
| 12672-29-6 | Arocior-1248 | 320 | | 7 |
| 11097-69-1 | Aroctor-1254 | 650 | | 7 |
| 11096-82-5 | Aroctor-1260 | 100 | bk l | UZ. |

| | | | | | | K40540 | |
|-------------------|-------------------|-------|-----------|------------------|----------|--------|------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | L | | |
| · Contract: | 91082 | _ | Case: | PCB | SDG: | FISH02 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345443 | | |
| Phase Weight: | 10.0 | _ (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | _ | | Date Analyzed: | 02/20/98 | | |
| % Solids: | 100 KATINE | _ | | Sulfur Clean-up: | Y | | Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|----------------|
| 12674-11-2 | Arocior-1016 | 150 | 1 4 V |
| 11104-28-2 | Aroclor-1221 | 150 | ν α |
| 11141-16-5 | Arocior-1232 | 150 | ע ע |
| 53469-21-9 | Aroclor-1242 | 150 | ت لا |
| 12672-29-6 | Arocior-1248 | 680 | - |
| 11097-69-1 | Aroclor-1254 | 900 | |
| 11096-82-5 | Aroclor-1260 | 150 | تي لا |

PERCENT LIPID ANALYSES

Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|---------------------------------------|--------|
| K40521 | 345425 | tissue | 0.3% |
| K40522 | 345426 | tissue | 0.3% |
| K40523 | 345427 | tissue | 0.3% |
| K40525 | 345429 | tissue | 0.2% |
| K40525 | 345430 | tissue | 0.4% |
| K40527 | 345431 | tissue | 0.8% |
| K40528 | 345432 | tissue | 0.3% |
| K40529 | 345433 | tissue | 0 4% |
| K40530-C | 345434 | tissue | 1.8% |
| K40531-C | 345435 | tissue | 2.0% |
| K40532-C | 345436 | tissue | 2.1% |
| K40533-C | 345437 | tissue | 2.5% |
| K40535 | 345438 | tissue | 1.6% |
| K40536 | 345439 | tissue | 0.5% |
| K40537 | 345440 | tissue | 0.2% |
| K40538 | 345441 | tissue | 1.6% |
| K40539 | 345442 | tissue | 0.8% |
| K40540 | 345443 | tissue | 1.3% |
| | | | |
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CHAIN OF CUSTODY

BLASLAND & BOUCK ENGINEERS, P.C.

CHAIN OF CUSTODY RECORD PAOJ. NO. PROJECT NAME wor GAS 2A 711 Kalamaza Kive Resident Fish NO 4.3 OF REMARKS CON TAINERS STA. NO. DATE TIME STATION LOCATION Andy ce whole budy comprists compris fulled and anylyse hollowing wely lies Morpon PLUD - ABSA # 2 K 10517-C 18/15 K40518-C 1015 410577-C 10/15 10520-6 10/15 Alun ABMAZ K40521 William Col K40522 K40523 CAPP(SKn-off Filletz) SM Assa (SKin-on, scules-on fillets K10514 K40515 K40526 יווים וושל אהוח#2 באינים K40527 K40528 K10529 Date / Time Relinguished by: (Signatural Received by: (Signature) Date / Time Relinquished by: Islaneture! Received by: (Signatural) 10/11/47 16.50 Date / Time Received by: Islamenial Relinguished by: Isignowel Date / Time Relinquisted by: Isignowiel Received by: Isigneturel Date / Time Remarks Date / Time Referred for Laboratory by: Relinguished by: Isimelaral SDG & STANAL ON THE ETR # 1000

CHAIN OF CUSTODY RECORD

PROJ. NO. PROJECT NAME Kalamozo River Resulent Insh St. od a SAMPLERS: (Stansium STA. NO. DATE TIME STATION LOCATION REMARKS K 40504-C2 10/1497 14:00 New Richmond ABSA# 11 _ Juyenile Sm Boss Combine Kilosulica with Kilosul-CI (promobel excha) K 16530-C Process cell Julenile bis composite samples as K 40531-C whole bulk composites and analyze - Il busing analytic K 40532-C Placedons cliscussed previously: 40533-C 10/11/97 10:00 Lake Megan ABSA#9 Juvenile Sm Aus Return C-1 to combine with 40534 C-2 wheh will fellow at -1 K 40534-CI Fillet car G (skin-off fillels) and bess (skin-on, K 40535 |dn/47 10:00 X Lake Allegan ABSA#9 Advil Cop Scales = on tills) and analyze tillets tallowing K40536 analytical procedures discussed previously K40537 K40538 1440577 Lala Alban MSA #9 Adult Bass 140540 K40541 K40592 Rollinguished by: (Signature) Relinguished by: (Signature) DATE DATE TIME | Received by: (Signature) Relinguished by: (Signature) DATE TIME Received by: (Signature) Relinguished by: (Signalure) DATE Relinquished by: (Signature) Relinquished by: (Signature) TIME Received for Laboratory by: TIME Romarks DATE DATE Relinquished by: (Signature) (Signature)

DATA REVIEW FOR

ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH03

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:

BBL BASIAND BOUCK & IFE. NC.

Blasland, Bouck & Lee, Inc. Syracuse, New York

Summary

The following is an assessment of the PCB data package for SDG# FISH03 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sneets used in the review of the package and sample results for PCB and Lipid analyses Analyses were performed on the following samples:

| | | | | | Anaiyse | 25 | |
|--------------|--|---|--|--|--|--|---|
| Lab ID Matri | Matrix | trix Sampling Date | VOA | BNA | PCB | TAL | %LIP: |
| 345446 | tissue | 10/17/97 | | | × | | × |
| 345447 | tissue | 10/16/97 | | | × | | x |
| 345448 | tissue | 10/16/97 | | | x | | × |
| 345449 | tissue | 10/16/97 | | | × | | × |
| 345450 | tissue | 10/16/97 | | | × | | x |
| 345451 | tissue | 10/16/97 | | | x | | x |
| 345452 | tissue | 10/16/97 | | | × | | x |
| 345453 | tissue | 10/16/97 | | | × | | x |
| 345454 | tissue | 10/16/97 | | | × | | x |
| 345510 | tissue | 10/20/97 | <u> </u> | | x | | x |
| 345511 | tissue | 10/20/97 | | | × | | x |
| 345512 | tissue | 10/20/97 | | | х | | × |
| 345513 | tissue | 10/20/97 | | | x | | x |
| 345514 | tissue | 10/20/97 | | | x | | x |
| 345515 | tissue | 10/20/97 | | | × | | × |
| 345516 | tissue | 10/21/97 | | | x | | х |
| 345517 | tissue | 10/21/97 | | | x | | x |
| 345518 | tissue | 10/21/97 | | | x | | x |
| 345519 | tissue | 10/21/97 | | | x | | x |
| 345520 | tissue | 10/21/97 | | | x | | х |
| | 345446 345447 345448 345449 345450 345451 345452 345453 345454 345510 345511 345512 345513 345514 345515 345516 345517 345518 345519 | 345446 tissue 345447 tissue 345448 tissue 345449 tissue 345450 tissue 345451 tissue 345452 tissue 345453 tissue 345454 tissue 345510 tissue 345511 tissue 345512 tissue 345513 tissue 345514 tissue 345515 tissue 345516 tissue 345518 tissue 345519 tissue | Lab ID Matrix Date 345446 tissue 10/17/97 345447 tissue 10/16/97 345448 tissue 10/16/97 345449 tissue 10/16/97 345450 tissue 10/16/97 345451 tissue 10/16/97 345452 tissue 10/16/97 345453 tissue 10/16/97 345454 tissue 10/20/97 345510 tissue 10/20/97 345511 tissue 10/20/97 345512 tissue 10/20/97 345513 tissue 10/20/97 345514 tissue 10/20/97 345515 tissue 10/20/97 345516 tissue 10/21/97 345518 tissue 10/21/97 345519 tissue 10/21/97 | Lab ID Matrix Date VOA 345446 tissue 10/17/97 345447 tissue 10/16/97 345448 tissue 10/16/97 345449 tissue 10/16/97 345450 tissue 10/16/97 345451 tissue 10/16/97 345452 tissue 10/16/97 345453 tissue 10/16/97 345454 tissue 10/20/97 345510 tissue 10/20/97 345511 tissue 10/20/97 345512 tissue 10/20/97 345513 tissue 10/20/97 345514 tissue 10/20/97 345515 tissue 10/21/97 345516 tissue 10/21/97 345518 tissue 10/21/97 345519 tissue 10/21/97 | Lab ID Matrix Date VOA BNA 345445 tissue 10/17/97 10/16/97 345447 tissue 10/16/97 10/16/97 345448 tissue 10/16/97 10/16/97 345449 tissue 10/16/97 10/16/97 345450 tissue 10/16/97 10/16/97 345451 tissue 10/16/97 10/16/97 345452 tissue 10/16/97 10/20/97 345454 tissue 10/20/97 10/20/97 345510 tissue 10/20/97 10/20/97 345512 tissue 10/20/97 10/20/97 345513 tissue 10/20/97 345514 tissue 10/20/97 345515 tissue 10/21/97 345516 tissue 10/21/97 345518 tissue 10/21/97 345519 tissue 10/21/97 | Lab ID Matrix Sampling Date VOA BNA PCB 345446 tissue 10/17/97 x 345447 tissue 10/16/97 x 345448 tissue 10/16/97 x 345449 tissue 10/16/97 x 345450 tissue 10/16/97 x 345451 tissue 10/16/97 x 345452 tissue 10/16/97 x 345453 tissue 10/16/97 x 345454 tissue 10/16/97 x 345510 tissue 10/20/97 x 345511 tissue 10/20/97 x 345512 tissue 10/20/97 x 345513 tissue 10/20/97 x 345514 tissue 10/20/97 x 345515 tissue 10/21/97 x 345516 tissue 10/21/97 x 345518 tissue 10/21/97 | Lab ID Matrix Sampling Date VOA BNA PCB TAL 345446 tissue 10/17/97 x x 345447 tissue 10/16/97 x x 345448 tissue 10/16/97 x x 345449 tissue 10/16/97 x x 345450 tissue 10/16/97 x x 345451 tissue 10/16/97 x x 345452 tissue 10/16/97 x x 345453 tissue 10/16/97 x x 345510 tissue 10/16/97 x x 345511 tissue 10/20/97 x x 345512 tissue 10/20/97 x x 345513 tissue 10/20/97 x x 345514 tissue 10/20/97 x x 345515 tissue 10/20/97 x x 345516< |

PCB ANALYSES

Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis—It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

Calibration

The response function of the electron capture detector is inherently non-linear, and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

Data Assessment

Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed beyond the specified holding time. Based on the deviation, all data has been qualified as estimated.

2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

3. System Performance

The system performance and column resolution were acceptable.

4 Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recoveries for both surrogates were above control limits in samples K40544 and K40547. All positive data for these samples have been qualified as estimated based on the recoveries. All other surrogate recoveries were within control limits.

Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

Due to a poor chromatographic pattern match, data for Aroclor 1254 in sample K40549, data for Aroclor 1260 in sample K40552 and data for Aroclor 1242 and 1260 in sample K40548 have been qualified as estimated with presumptive evidence of identification.

The Aroclors present in sample K40550 have been misidentified. The correct identifications should be Aroclors 1248, 1254 and 1260. The data have been corrected to reflect the change.

All other Aroclors have been correctly identified/quantitated.

7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

No matrix spike/matrix spike duplicate was included in this data set. No evaluation of matrix-specific performance could therefore be performed.

A matrix spike blank was extracted and analyzed with the samples. Since the matrix spike blank demonstrated acceptable recoveries, no action has been taken based on the lack of a matrix spike.

8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



PCB Data Review Checklist

| YES | NO | <u>NA</u> |
|-------------|-----|---------------|
| | | |
| X | | |
| <u>X</u> | ··· | |
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| X | | |
| X | | ************* |
| | X | |
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PCB Data Review Checklist - Page 2

| | YES | NO | NA_ |
|---|-----|---|-------------|
| Calibration and GC Performance | | | |
| Are the following chromatograms and data printouts present? | | | |
| Aroclor 1016/1260 | X | | |
| Aroclor 1221 | X | | |
| Aroclor 1232 | X | | |
| Arocior 1242 | X | | |
| Aroclor 1248 | X | | |
| Aroclor 1254 | X | | |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence? | X | | |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD) | X | *************************************** | |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard? | X | | |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed? | X | - | |
| Are %D values for all compounds within limits (less than 15%)? | X | | |
| Analytical Sequence Check | | | |
| Is a analytical sequence form present and complete for each column and each period of analyses? | X | - | |
| Was the proper analytical sequence followed? | X | | |
| Cleanup Efficiency Verification | | | |
| If GPC cleanup was performed, is Gel Permeation Chromatography Check Form present? | | | X |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X | | |
| PCB Identification | | | |
| Is both a combined and single column Aroclor Identification Report present for every sample? | X | | |
| Do the combined column and individual column Aroclor identifications agree? | X | | · |
| Were there any false negatives? | | X | |

PCB Data Review Checklist - Page 3

| | YES | NO | NA_ |
|--|----------|----|-----|
| Was GC/MS confirmation provided when required? | | · | X |
| Compound Quantitation and Reported Detection Limits | <u>s</u> | | |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | x | | |
| Chromatogram Quality | | | |
| Were the baselines stable? | X | | |
| Were any electronegative displacement (negative peaks) or unusual peaks detected? | | X | |
| Field Duplicates | | | |
| Were field duplicates submitted with the samples? | | | X |

PCB Holding Time and Surrogate Recovery Summary

| Sample ID | Holding Time | Surre | gates |
|-----------|--------------|---|--------------|
| | | TCX | DCB |
| K40542 | +26 | | |
| K40543 | +26 | | |
| K40544 | +29 | | |
| K40545 | +26 | | |
| K40546 | +26 | · - · · · · · · · · · · · · · · · · · · | |
| K40547 | +29 | | |
| K40548 | +26 | | |
| K40549 | +26 | | |
| K40550 | +26 | | |
| K40552 | +26 | | |
| K40553 | +26 | - | |
| K40554 | +26 | | |
| K40555 | +26 | | |
| K40556 | +25 | | |
| K40557 | +26 | | |
| K40568 | +26 | | |
| K40569 | +26 | | |
| K40570 | +26 | | |
| K40571 | +26 | | |
| K40572 | +26 | | |
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Surrogate Standards
TCX Tetrachioro-m-xylene
DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out Recovery high

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

PCB Calibration Summary

Instrument: HP3327
Column: RTX-35 / RTX-5

| Date | 2/18/98- | 2/20/98 | 2/20/98 | 2/21 | 2/21 | 2/21 | 2/21 | 2.21 |
|----------------------|-----------------|---------------|---------------|---------------|---------------|--|--|-------|
| Time. | 2/19/98 | 2251 | 2317 | 0435 | 0001 | 1204 | 1231 | 1748 |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont Cal. | Cont. |
| | %RSD | % D | %D | %D | %5 | %D | %D | 900 |
| Arocior 1016 | ok | | | | | | | |
| Arocior 1221 | ok | | | | | | | |
| Arocior 1232 | ok | | | | | | | |
| Arocior 1242 | ok | | ok | | | ļ | | |
| Arocior 1248 | ok | ok | | ok | | ok | | ok |
| Aroclor 1254 | ok | | | | ok | | | |
| Arocior 1260 | ok | <u> </u> | | | | | ок | |
| Tetrachioro-m-xylene | ok | <u> </u> | | | | | <u></u> | |
| Decachlorobiphenyl | ok_ | | | | | | | |
| Affected Samples: | | | | } | <u> </u> | | | |
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PCB Calibration Summary - Page 2

Instrument: <u>HP3327</u> Column: <u>RTX-35 / RTX-5</u>

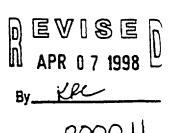
| Date: | 2/18/98- | 2/21/98 | 2/23/98 | 2/23 | 2/24 | 2/24 | <u> </u> |
|----------------------|-----------------|---------------|---------------|---------------|---------------|--------------|--------------|
| Time: | 2/19/98 | 1815 | 2329 | 2355 | 0141 | 0207 | <u> </u> |
| | Initial Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal. | Cont. Cal | |
| | %RSD | %D | %D | %D | %D | %D | |
| Aroclor 1016 | ok | | | | | | |
| Arocior 1221 | ok | | | | | | <u> </u> |
| Arocior 1232 | ok | | | | | | |
| Arocior 1242 | ok | ok | | ok | | | |
| Arocior 1248 | ok | | ok | | ok | | <u> </u> |
| Arocior 1254 | ок | | | | | ok | |
| Arocior 1260 | _ok | | | | | | |
| Tetrachioro-m-xylene | ok | | | | | | <u> </u> |
| Decachlorobiphenyl | ok | | | | | | |
| Affected Samples: | | | | | | | |
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CORRECTED ANALYSIS SUMMARY FORMS

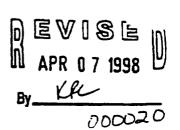
| | | | | | K40542 |
|-------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | ВІОТА | _ | Lab Sample ID: | 345446 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | _ | Date Analyzed: | 02/21/98 | |
| % Solids: | 108 VEC 41148 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | <u> </u> |
| 11104-28-2 | Aroclor-1221 | 50 | 4 1 |
| 11141-16-5 | Arocior-1232 | 50 | N C |
| 53469-21-9 | Arocior-1242 | 50 | D BK |
| 12672-29-6 | Aroclor-1248 | 250 | |
| 11097-69-1 | Aractor-1254 | 170 | |
| 11096-82-5 | Aroclor-1260 | 92 | |



| | | | | | K40543 |
|-------------------|-------------------|---------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Cod | : INCHVT | <u></u> | |
| Contract: | 91082 | Cas | e: PCB | SDG: | FISH03 |
| Phase Type: | вюта | _ | Lab Sample ID: | 345447 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 185 VE ALTINE | - | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | T O W |
| 11104-28-2 | Arocior-1221 | 50 | THE US |
| 11141-16-5 | Aroclor-1232 | 50 | T # 15 |
| 53469-21-9 | Aroclor-1242 | 50 | TW # |
| 12672-29-6 | Aroclor-1248 | 170 | 7 |
| 11097-69-1 | Aroclor-1254 | 150 | 7 |
| 11096-82-5 | Aroclor-1260 | 43 | J |



| | | | | | | K40544 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 |
| Phase Type: | ВІОТА | | | Lab Sample ID: | 345448 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 4.0 | | | Date Analyzed: | 02/24/98 | |
| % Solids: | 100 VIL 417198 | | | Sulfur Clean-up: | Υ | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 200 | W 105 |
| 11104-28-2 | Aroclor-1221 | 200 | B (57 |
| 11141-16-5 | Arocior-1232 | 200 | A 102 |
| 53469-21-9 | Arocior-1242 | 200 | # 4 |
| 12672-29-6 | Arocior-1248 | 930 | 7 |
| 11097-69-1 | Aroclor-1254 | 1400 | 7 |
| 11096-82-5 | Aroctor-1260 | 290 | 7 |

| | | | | | | K40545 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | · | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 | _ |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345449 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| jection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 LPC ANTAK | | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | ري لا |
| 11104-28-2 | Arocior-1221 | 50 | A M |
| 11141-16-5 | Arocior-1232 | 50 | TW # |
| 53469-21-9 | Arocior-1242 | 60 | 7 |
| 12672-29-6 | Arocior-1248 | 50 | # (L. |
| 11097-69-1 | Aroctor-1254 | 280 | 7 |
| 11096-82-5 | Aroctor-1260 | 44 | J |

| | | | | | i I | K40546 | |
|--|--------------------|------|-----------|---|--|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab Sample (D: | 345450 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | _ | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 LAC 41748 | - | | Sulfur Clean-up: | Y | | (Y/N) |
| Phase Type: Phase Weight: Injection Volume: Dilution Factor: | 10.0 1.0 1.0 | • | 3432. | Lab Sample ID: Date Received: Date Extracted: Date Analyzed: | 345450 10/18/97 12/17/97 02/21/98 | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIÈR | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 50 | N CO | |
| 11104-28-2 | Aroclor-1221 | 50 | \$ CD | |
| 11141-16-5 | Aroclor-1232 | 50 | W # | |
| 53469-21-9 | Aroclor-1242 | 50 | En # | |
| 12672-29-6 | Arocior-1248 | 430 | 4 | |
| 11097-69-1 | Arocior-1254 | 50 | J 44 W | |
| 11096-82-5 | Aroclor-1260 | 110 | 7 | |

| | | | | | | K40547 | |
|-------------------|-------------------|--------------|-------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | Lat | Cade: | INCHUT | | | _ |
| Contract: | 91082 | - | Case: | PC8 | SDG: | FISH03 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345451 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 4.0 | _ | | Date Analyzed: | 02/24/98 | | |
| % Solids: | 100 VALANIAY | _ | | Sulfur Clean-up: | Y | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|--------------|
| 12674-11-2 | Aroclor-1016 | 200 | In at |
| 11104-28-2 | Arocior-1221 | 200 | 1 4 10 |
| 11141-16-5 | Aroclor-1232 | 200 | 1 4 10 |
| 53469-21-9 | Arocior-1242 | 200 | # ,- |
| 12672-29-6 | Arocior-1248 | 1300 | |
| 11097-69-1 | Aroclor-1254 | 3000 | 7 |
| 11096-82-5 | Aroctor-1260 | 200 | The state of |

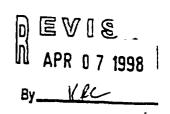
| | | | | | | K40548 | - |
|------------------|-------------------|--------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | · | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | _ |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345452 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 200 LA AMAK | - - | | Sulfur Clean-up: | Y | (Y/N) | |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 50 | EU R |
| 11104-28-2 | Arociar-1221 | 50 | A 12 |
| 11141-16-5 | Aroclor-1232 | 50 | A M |
| 53469-21-9 | Arocior-1242 | 240 | ar |
| 12672-29-6 | Aroclor-1248 | 50 | 21 V |
| 11097-69-1 | Aroclor-1254 | 50 | R 12 |
| 11096-82-5 | Aroclor-1260 | 110 | JN |

EPA SAMPLE NO.

| | | | | • | (40549 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | РСВ | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | Lab Sample ID: | 345453 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/18/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | - | Date Analyzed: | 02/21/98 | |
| % Solids: | 280 YRL 41748 | _ | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150 | W W |
| 11104-28-2 | Aroclor-1221 | 150 | A M |
| 11141-16-5 | Aroclor-1232 | 150 | 4 10 |
| 53469-21-9 | Arocior-1242 | 150 | TO BY |
| 12672-29-6 | Aroclor-1248 | 150 | 40 |
| 11097-69-1 | Aroclor-1254 | 1000 | JU |
| 11096-82-5 | Aroctor-1260 | 150 | 75 |



000077

| | | | | | | K40550 | |
|-------------------|-------------------|------|-----------|------------------|----------|--------|---|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | | |
| Contract: | 91082 | - | Case: | PCB | SDG: | FISH03 | _ |
| Phase Type: | BIOTA | | | Lab Sample ID: | 345454 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/18/97 | | |
| Injection Volume: | 1.0 | (uL) | , | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 KR 41748 | | | Sulfur Clean-up: | Υ | (Y/N) | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50 | B 4 |
| 11104-28-2 | Aroclor-1221 | 50 | # W |
| 11141-16-5 | Arocior-1232 | 50 | \$ W |
| 53469-21-9 | Arocior-1242 | 50 | \$ 12 |
| 12672-29-6 | Aroclor-1248 | 370 sao | 77 |
| 11097-69-1 | Arocior-1254 | 230 50 | 77/7 |
| 11096-82-5 | Arocior-1260 | GC 120 | 7 |

| | | | | | | K40552 |
|-------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | | Lab Code: | INCHVT | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | | | Lab Sample ID: | 3455 10 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 3.0 | | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 VEC 417198 | | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 150 | 1 V |
| 11104-28-2 | Arocior-1221 | 150 | W 1/2 |
| 11141-16-5 | Arocior-1232 | 150 | 1 L |
| 53469-21-9 | Aroclor-1242 | 150 | 1 4 U |
| 12672-29-6 | Arocior-1248 | 150 | # U. |
| 11097-69-1 | Arocior-1254 | 150 | 4 U |
| 11096-82-5 | Aroctor-1260 | 270 | J. |

| | | | | | 1 | K40553 |
|-------------------|-------------------|------|-------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lat | Code: | INCHVT | <u></u> | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345511 | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | - | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KR AMAR | - | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIEF | ₹ |
|------------|--------------|-----------------------|-----------|-------------|
| 12674-11-2 | Arocior-1016 | 50 | े ४ | W |
| 11104-28-2 | Aroclor-1221 | 50 | 8 | Civil Civil |
| 11141-16-5 | Arocior-1232 | 50 | At. | w |
| 53469-21-9 | Arocior-1242 | 50 | स | لننا |
| 12672-29-6 | Arocior-1248 | 50 | H. | EL EL |
| 11097-69-1 | Arocior-1254 | 87 | 1 | 7 |
| 11096-82-5 | Aroclor-1260 | 34 | J | |

| | | | | | | K40554 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | _ | Lab Code: | INCHVT | | | |
| Contract: | 91082 | _ | Case: | PCB | SDG: | FISHO3 | |
| Phase Type: | BIOTA | _ | | Lab Sample ID: | 345512 | | |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | |
| Dilution Factor: | 3.0 | | | Date Analyzed: | 02/21/98 | | |
| % Solids: | 100 COL AMINE | - | | Sulfur Clean-up: | Y | | (Y/N) |
| | | | | | | | |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Arocior-1016 | 150 | N W |
| 11104-28-2 | Aroclor-1221 | 150 | 8 V |
| 11141-16-5 | Aroclor-1232 | 150 | y (0) |
| 53469-21-9 | Arocior-1242 | 150 | حي در |
| 12672-29-6 | Arocior-1248 | 150 | ر لا |
| 11097-69-1 | Arocior-1254 | 190 | 7 |
| 11096-82-5 | Aroclor-1260 | 460 | , 2 |

| | | | | | | K40555 | |
|------------------|-------------------|------|-----------|------------------|----------|--------|-------|
| Lab Name: | ITS Environmental | | Lab Gode: | INCHVT | | | |
| Contract: | 91082 | | Case: | PCB | SDG: | FISH03 | |
| Phase Type: | ВІОТА | | | Lab Sample ID: | 345513 | | _ |
| Phase Weight: | 10.0 | (g) | | Date Received: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Extracted: | 12/17/97 | | _ |
| Dilution Factor: | 2.0 | | | Date Analyzed: | 02/21/98 | | _ |
| % Solids: | 100 KR 47198 | | | Sulfur Clean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|--------------------------|-----------|--|
| 12674-11-2 | Arocior-1016 | 100 | 1 40 | |
| 11104-28-2 | Aroclor-1221 | 100 | R VO | |
| 11141-16-5 | Aroclor-1232 | 100 | 20 R | |
| 53469-21-9 | Aroclor-1242 | 100 | 4 W | |
| 12672-29-6 | Aroclor-1248 | 100 | N W | |
| 11097-69-1 | Aroclor-1254 | 310 | 4 | |
| 11096-82-5 | Aroclor-1260 | 80 | J | |

| | | | | | | | K40556 | |
|------------------|-------------------|------|-----------|------------|----------|----------|--------|-------|
| Lab Name: | ITS Environmental | - | Lab Code: | INCHVT | | | | |
| Contract: | 91082 | - | Case: | PCB | | SDG: | FISH03 | |
| Phase Type: | BIOTA | _ | | Lab San | npie ID: | 345514 | | |
| Phase Weight: | 10.0 | (g) | | Date Re | ceived: | 10/23/97 | | |
| njection Volume: | 1.0 | (uL) | | Date Ext | tracted: | 12/17/97 | | |
| Dilution Factor: | 1.0 | | | Date An | alyzed: | 02/21/98 | | |
| % Solids: | 100 KR ANAR | - | | Sulfur Cle | ean-up: | Y | | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|------------|--|
| 12674-11-2 | Aroclor-1016 | 50 | J 14 VC | |
| 11104-28-2 | Aroclor-1221 | 50 | # 4 | |
| 11141-16-5 | Aroclor-1232 | 50 | 18 U | |
| 53469-21-9 | Aroclor-1242 | 50 | <u>u</u> . | |
| 12672-29-6 | Aroclor-1248 | 50 | Т | |
| 11097-69-1 | Aroclor-1254 | 520 | | |
| 11096-82-5 | Arocior-1260 | 100 | 7 | |

| | | | | K40557 | |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 9 10 8 2 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345515 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor: | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KRAMIGE | | Suifur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50 | \$ 15 | |
| 11104-28-2 | Arocior-1221 | 50 | 8 10 | |
| 11141-16-5 | Aroclor-1232 | 50 | A W | |
| 53469-21-9 | Aroclor-1242 | 50 | Tr 1/2 | |
| 12672-29-6 | Arocior-1248 | 50 | 4 5 | |
| 11097-69-1 | Arocior-1254 | 140 | 7 | |
| 11096-82-5 | Arocior-1260 | 32 | j | |

EPA SAMPLE NO.

| | | | | | K40568 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name: | ITS Environmental | Lab Code: | INCHVT | | |
| Contract: | 91082 | Case: | PCB | SDG: | FISH03 |
| Phase Type: | BIOTA | | Lab Sample ID: | 345516 | |
| Phase Weight: | 10.0 | (g) | Date Received: | 10/23/97 | |
| Injection Volume: | 1.0 | (uL) | Date Extracted: | 12/17/97 | |
| Dilution Factor; | 1.0 | | Date Analyzed: | 02/21/98 | |
| % Solids: | 100 KK 41198 | | Sulfur Clean-up: | Y | (Y/N) |

| CAS NO. | COMPOUND | CONCENTRATION (ug/Kg) | QUALIFIER | | |
|------------|--------------|-----------------------|-----------|--|--|
| 12674-11-2 | Arocior-1016 | 50 | D & C | | |
| 11104-28-2 | Arocior-1221 | 50 | CV W | | |
| 11141-16-5 | Arocior-1232 | 50 | 8 12 | | |
| 53469-21-9 | Aroclor-1242 | 50 | # W | | |
| 12672-29-6 | Aroctor-1248 | 110 | 3 | | |
| 11097-69-1 | Arocior-1254 | 140 | 1 7 | | |
| 11096-82-5 | Aroclor-1260 | 58 | 7 | | |

~~~. ~ ~

|                   |                   |      |           |                  |          | K40569 |  |
|-------------------|-------------------|------|-----------|------------------|----------|--------|--|
| Lab Name:         | ITS Environmental | _    | Lab Code: | INCHVT           |          |        |  |
| Contract:         | 91082             | _    | Case:     | PCB              | SDG:     | FISH03 |  |
| Phase Type:       | BIOTA             | _    |           | Lab Sample ID:   | 345517   |        |  |
| Phase Weight:     | 10.0              | (g)  |           | Date Received:   | 10/23/97 |        |  |
| Injection Volume: | 1.0               | (uL) |           | Date Extracted:  | 12/17/97 |        |  |
| Dilution Factor:  | 5.0               |      |           | Date Analyzed:   | 02/21/98 |        |  |
| % Solids:         | 100 KRC 417198    | •    |           | Sulfur Clean-up: | Y        | (Y/N)  |  |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroctor-1016 | 250                   | W W       |
| 11104-28-2 | Arocior-1221 | 250                   | IN A      |
| 11141-16-5 | Arocior-1232 | 250                   | # CD      |
| 53469-21-9 | Aroclor-1242 | 250                   | # 10      |
| 12672-29-6 | Aroclor-1248 | 250                   | 1 W       |
| 11097-69-1 | Aroclor-1254 | 1400                  | 7         |
| 11096-82-5 | Aroctor-1260 | 250                   | J         |

|                  |                   |      |           |                  |          | K40570        |      |
|------------------|-------------------|------|-----------|------------------|----------|---------------|------|
| Lab Name:        | ITS Environmental | _    | Lab Code: | INCHVT           |          | <del></del> _ |      |
| Contract:        | 91082             | -    | Case:     | PCB              | SDG:     | FISH03        |      |
| Phase Type:      | вюта              | _    |           | Lab Sample ID:   | 345518   |               |      |
| Phase Weight:    | 10.0              | (g)  |           | Date Received:   | 10/23/97 |               |      |
| njection Volume: | 1.0               | (uL) |           | Date Extracted:  | 12/17/97 |               |      |
| Dilution Factor: | 3.0               | _    |           | Date Analyzed:   | 02/21/98 |               |      |
| % Solids:        | 100 KR 411198     | •    |           | Sulfur Clean-up: | Y        | (             | Y/N) |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |  |  |
|------------|--------------|-----------------------|-----------|--|--|
| 12674-11-2 | Aroclor-1016 | 150                   | 4 45      |  |  |
| 11104-28-2 | Arocior-1221 | 150                   | مي لا     |  |  |
| 11141-16-5 | Aroctor-1232 | 150                   | 8 W       |  |  |
| 53469-21-9 | Arocior-1242 | 150                   | Tr 12     |  |  |
| 12672-29-6 | Arocior-1248 | 150                   | # U.      |  |  |
| 11097-69-1 | Aroclor-1254 | 730                   | 7         |  |  |
| 11096-82-5 | Aroclor-1260 | 180                   | 7         |  |  |

|                  |                   |             |           |                  |          | K40571 |  |  |
|------------------|-------------------|-------------|-----------|------------------|----------|--------|--|--|
| Lab Name:        | ITS Environmental | _           | Lab Code: | INCHVT           |          |        |  |  |
| Contract:        | 91082             | _           | Case:     | РСВ              | SDG:     | FISH03 |  |  |
| Phase Type:      | BIOTA             | _           |           | Lab Sample ID:   | 345519   |        |  |  |
| Phase Weight:    | 10.0              | (g)         |           | Date Received:   | 10/23/97 |        |  |  |
| njection Volume: | 1.0               | (uL)        |           | Date Extracted:  | 12/17/97 |        |  |  |
| Dilution Factor: | 1.0               |             |           | Date Analyzed:   | 02/21/98 |        |  |  |
| % Solids:        | 100 VR AMPR       | <del></del> |           | Sulfur Clean-up: | Y        | (Y/N)  |  |  |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                       | ZV X      |
| 11104-28-2 | Aroclor-1221 | 50                       | TU B      |
| 11141-16-5 | Arocior-1232 | 50                       | 8 M2      |
| 53469-21-9 | Arocior-1242 | 50                       | R M       |
| 12672-29-6 | Arocior-1248 | 150                      | 7         |
| 11097-69-1 | Arocior-1254 | 370                      | 7         |
| 11096-82-5 | Aroclor-1260 | . 47                     | J         |

EPA SAMPLE NO.

|                   |                   |           |                  |          | K40572 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |        |
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH03 |
| Phase Type:       | BIOTA             | _         | Lab Sample ID:   | 345520   |        |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 12/17/97 |        |
| Dilution Factor:  | 1.0               | _         | Date Analyzed:   | 02/21/98 |        |
| % Solids:         | 180 KRL ANTHS     |           | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50                    | 1 4       |
| 11104-28-2 | Arocior-1221 | 50                    | 4 12      |
| 11141-16-5 | Aroclor-1232 | 50                    | 8 W       |
| 53469-21-9 | Aroclor-1242 | 50                    | TU W      |
| 12672-29-6 | Aroclor-1248 | 190                   | 7         |
| 11097-69-1 | Aroclor-1254 | 300                   | 7         |
| 11096-82-5 | Aroclor-1260 | 88                    | 7         |



000186



#### Percent Lipids Results

| Sample ID   | Lab ID | Matrix | Resutt |
|-------------|--------|--------|--------|
| K40542      | 345446 | tissue | 0.4%   |
| K40543      | 345447 | tissue |        |
| K40544      | 345448 | tissue | 14%    |
| K40545      | 345449 | tissue | 0 3%   |
| K40546      | 345450 | tissue | 0.8%   |
| K40547      | 345451 |        | 0.7%   |
| K40548      | 345452 | tissue | 0.5%   |
| K40549      | 345453 | tissue | 0 3%   |
| K40550      | 345454 | tissue | C 7%   |
| <40552      |        | tissue | 0.7%   |
| K40553      | 345510 | tissue | 0.4%   |
| (40554      | 345511 | tissue | 0.2%   |
| (40555      | 345512 | tissue | 1.0%   |
|             | 345513 | tissue | 0.6%   |
| (40556      | 345514 | tissue | 0.8%   |
| (40557      | 345515 | tisue  | 0.3%   |
| 40568       | 345516 | tissue | 0.4%   |
| 40569       | 345517 | tissue |        |
| 40570       | 345518 | tissue | 1.1%   |
| 40571       | 345519 | tissue | 0.3%   |
| 40572       | 345520 | tissue | 0.3%   |
|             |        |        | 0.4%   |
|             |        |        |        |
| <del></del> |        |        |        |
|             |        |        |        |
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|             |        |        |        |

CHAIN OF CUSTODY



6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TEL: (315) 446-9120

**CHAIN OF CUSTODY RECORD** 

PROJ. NO. **PROJECT NAME** Kalamuzo River Resulut Ish SAMPLERS: (Signalure) STA NO. DATE REMARKS STATION LOCATION 40564-C2 10/1492 1470 New Richmond ABSA#11 JUYENILE SM BASS Combina Kilosal ca with Kilosal-CI (paridal earlier) K 46530-C Process all Juliante bas composite samples as whole buy composites and any ze to bushing analytic K140531-C K 40532-C placedons cliscosted previously-40532 10/11/97 10:00 Lake Megan ABSA#9 Juvenile Sm Bres Retain C-1 10 combine with 40534 C-2 wheh will fellow of 40534-61 Fillet carp (Skin-off fillets) and lass (skin-on, -scales-on lithets) and only re-fillets tallowing -X Lala Allogan ABSA 149 Advil Cop K 40535 John 47 10:00 K40536 analytical procedures discussed previously KY0537 K40538 **127023**3 Lale Albyan MSN #9 Adult Bass 140540 K40541 Rollinguished by: (Signature) DATE TIME | Rollinguished by: (Signature) TIME Received by: (Signature) DATE KESO Rollinguished by: (Signature) DATE Rollinguished by: (Signature) Received by: (Signature) Relinquished by: (Signature) TIME Roce ved for Laboratory by: Remarks DATE TIME Relinguished by: (Signature) neigen Mesor



6723 Towpath Road, P.O. Box 66 Syracuse, New York 13214-0066 TFI: (315) 446-9120

#### **CHAIN OF CUSTODY RECORD**

| 1EL: (315                       | 1) 440-9    | 120        |       |      |               |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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| PROJ. NO<br>41524711<br>SAMPLER | /           | K          |       | naz. | D River       | :_Kise     | ubat fish                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             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              | -{         |                            | · <del></del> · · · |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |          |
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| K46548                          | 1           |            |       |      |               |            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               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#### DATA REVIEW FOR

### ALLIED PAPER, INC./PORTAGE CREEK/KALAMAZOO RIVER SUPERFUND SITE

SDG# FISH04

PCB ANALYSES

BIOTA

Analyses performed by:

ITS Environmental, Inc. Colchester, Vermont

Review performed by:

BBL BASIAND BOUCK & LEE. INC.

Blasland, Bouck & Lee, Inc. Syracuse, New York

#### Summary

The following is an assessment of the PCB data package for SDG# FISH04 for the analysis of tissue from the Allied Paper, Inc./Portage Creek/Kalamazoo River Superfund Site. Included with this assessment are the data review check sneets used in the review of the package and sample results for PCB and Lipid analyses. Analyses were performed on the following samples:

|           |        |        |                  | An       |         | Anaivs | 25  |          |
|-----------|--------|--------|------------------|----------|---------|--------|-----|----------|
| Sample ID | Lab iD | Matrix | Sampling<br>Date | VOA      | BNA     | PCB    | TAL | %LIPIQ   |
| K40573    | 345521 | tissue | 10/21/97         |          |         | ×      |     | x        |
| K40574    | 345522 | tissue | 10/21/97         |          |         | ×      |     | x        |
| K40551-C  | 345523 | tissue | 10/20/97         |          |         | х      |     | _ x      |
| K40564-C  | 345524 | tissue | 10/21/97         |          | <u></u> | x      |     | x        |
| K40565-C  | 345525 | tissue | 10/21/97         |          |         | x      |     | x        |
| K40566-C  | 345526 | tissue | 10/21/97         |          |         | x      |     | ×        |
| K40567-C  | 345527 | tissue | 10/21/97         |          |         | x      |     | x        |
| K40558    | 345528 | tissue | 10/20/97         |          |         | x      |     | ×        |
| K40559    | 345529 | tissue | 10/20/97         |          |         | х      |     | x        |
| K40560    | 345530 | tissue | 10/20/97         | <u> </u> |         | x      |     | <u>x</u> |
| K40561    | 345531 | tissue | 10/20/97         |          |         | х      |     | x        |
| K40562    | 345532 | tissue | 10/20/97         |          |         | x      |     | x        |
| K40563    | 345533 | tissue | 10/20/97         |          |         | x      |     | x        |
| K40575    | 345534 | tissue | 10/21/97         |          |         | x      |     | x        |
| K40576    | 345535 | tissue | 10/21/97         |          |         | x      |     | ×        |
| K40577    | 345536 | tissue | 10/21/97         |          |         | x      |     | ×        |
| K40578    | 345537 | tissue | 10/21/97         |          |         | x      |     | x        |
| K40579    | 345538 | tissue | 10/21/97         |          |         | х_     |     | x        |
| K40580    | 345539 | tissue | 10/21/97         |          |         | x      |     | ×        |
| K40582    | 345540 | tissue | 10/21/97         |          |         | х      |     | x        |
|           |        |        |                  |          |         |        |     |          |

PCB ANALYSES

#### Introduction

Analyses were performed according to the USEPA SW-846 method 8081, modified for PCB only analysis.

The data review process is intended to evaluate the data on a technical basis. It is assumed that the data package represents the best efforts of the laboratory and had already been subjected to adequate and sufficient quality review prior to submission.

During the review process, laboratory qualified and unqualified data are verified against the supporting documentation. Based on this evaluation, qualifier codes may be added, deleted, or modified by the data reviewer. Results are qualified with the following codes in accordance with National Functional Guidelines:

- U The compound was analyzed for but not detected. The associated value is the compound quantitation limit.
- J The compound was positively identified; however, the associated numerical value is an estimated concentration only.
- B The compound has been found in the sample as well as its associated blank, its presence in the sample may be suspect.
- N The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification.
- JN The analysis indicates the presence of a compound for which there is presumptive evidence to make a tentative identification. The associated numerical value is an estimated concentration only.
- E The compound was quantitated above the calibration range.
- D Concentration is based on a diluted sample analysis.
- UJ The compound was not detected above the reported sample quantitation limit. However, the reported limit is approximate and may or may not represent the actual limit of quantitation.
- R The sample results are rejected.

Two facts should be noted by all data users. First, the "R" flag means that the associated value is unusable. In other words, due to significant QC problems, the analysis is invalid and provides no information as to whether the compound is present or not. "R" values should not appear on data tables because they cannot be relied upon, even as a last resort. The second fact to keep in mind is that no compound concentration, even if it has passed all QC tests, is guaranteed to be accurate. Strict QC serves to increase confidence in data but any value potentially contains error.

The data presented in the package has been derived using a procedure developed by ITS Environmental, Inc. in an attempt to improve the analytical process of calibration, identification, and quantitation of PCBs as Aroclors. Key components of this procedure include:

#### Calibration

The response function of the electron capture detector is inherently non-linear and while significant linearization is achieved for this detector by electronic means, some non-linearity remains. Power function linearization is used to "straighten the curve" and allow the use of response factors for calibration purposes.

During the initial calibration a response factor is calculated for each peak in the individual Aroclors.

A weighted response factor calculation has been used to adjust for non-linearity at the low end of the calibration curve.

#### Identification

Peak retention times are relative. Retention times are in set windows relative to the time markers DCB and TCMX. Time markers adjust for minor variations in column flow or instrument condition and allow the use of very tight windows which minimizes the number of both false positive and false negative peak identifications.

The determination of "which Aroclor or mixture of Aroclors will produce a chromatogram most similar to that of the residue" is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The "most similar" Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors. This is similar to the procedure presented by L.E. Slivon, P.M. Schumacher and A. Alford-Stevens for the determination of Aroclor composition from GC/MS level of chlorination results.

Identification/quantitation of Aroclors in samples is based on the combined response of two columns, typically RTX-5 and RTX-35. The pooling of response combines the unique qualities of both columns to derive a more defined Aroclor pattern which less likely to be affected by interferents. Identification/quantitation data for the individual columns is provided in the package and can be used as a check on the combined column results.

#### Data Assessment

#### 1. Holding Time

Since the samples were held in frozen storage, no holding time from date of collection applies; however, a holding time of 40 days from extraction to analysis has been applied to all samples.

All samples were analyzed within the specified holding time.

#### 2. Blank Contamination

Quality assurance blanks, i.e., method, field or rinse blanks, are prepared to identify any contamination which may have been introduced in to the samples during sample preparation or field activity. Method blanks measure laboratory contamination. Field and rinse blanks measure contamination of samples during field operations.

No target compounds were detected in the method blanks. Field blanks are not applicable to biota sampling.

#### 3. System Performance

The system performance and column resolution were acceptable.

#### 4 Calibration

Satisfactory instrument calibration is established to insure that the instrument is capable of producing acceptable quantitative data. An initial calibration demonstrates that the instrument is capable of acceptable performance at the beginning of an experimental sequence. The continuing calibration verifies that the instrument daily performance is satisfactory.

#### 4.1 Initial Calibration

The method allows a maximum RSD of 20%. The initial calibration was within this limit for all Aroclors.

#### 4.2 Continuing Calibration

A maximum %D of 15 is allowed. All continuing calibrations were within the specified limit for all Aroclors.

#### 5. Surrogates / System Monitoring Compounds

All samples to be analyzed for organic compounds are spiked with surrogate compounds prior to sample preparation to evaluate overall laboratory performance and efficiency of the analytical technique.

Recovery for one surrogate was below control limits in samples K40565-C. K40566-C and K40567-C. Since recoveries for the remaining surrogate were within control limits, no data has been qualified based on the deviations. All other surrogate recoveries were within control limits.

#### 6. Compound Identification

The determination of Aroclor presence is made by expressing the unknown sample chromatogram as a linear combination of the Aroclors. The most similar Aroclor or mixture of Aroclors is determined by using a least squares minimization of the difference between the unknown chromatogram and the linear combination of Aroclors.

Identification/quantitation of Aroclors is based on the combined response of the RTX-5 and RTX-35 columns. Identification/quantitation data for the individual columns is provided in the package and has been used as a check on the combined column results.

All Aroclors have been correctly identified/quantitated.

#### 7. Matrix Spike/Matrix Spike Duplicate/Matrix Spike Blank

All matrix spike and matrix spike duplicate recoveries and relative percent differences between recoveries were within control limits. All matrix spike blank recoveries were also within control limits.

#### 8. System Performance and Overall Assessment

Overall system performance was acceptable. Other than for those deviations specifically mentioned in this review, the overall data quality is within the guidelines listed in the analytical method.



#### PCB Data Review Checklist

|                                                                                                              | YES | NO          | NA |
|--------------------------------------------------------------------------------------------------------------|-----|-------------|----|
| Data Completeness and Deliverables                                                                           |     |             |    |
| Is there a narrative or cover letter present?                                                                | X   |             |    |
| Are the sample numbers included in the narrative?                                                            | X   |             |    |
| Are the sample chain-of-custodies present?                                                                   | X   |             |    |
| Do the chain-of-custodies indicate any problems with sample receipt or sample condition?                     |     | X           |    |
| Holding Times                                                                                                |     |             |    |
| Have any holding times been exceeded?                                                                        |     | X           |    |
| Surrogate Recovery                                                                                           |     |             |    |
| Are surrogate recovery forms present?                                                                        | X   |             |    |
| Are all the samples listed on the appropriate surrogate recovery form?                                       | X   | -           |    |
| Were recoveries of TCX or DCB outside of specified limits for any sample or blank?                           | X   | -           |    |
| If yes, were the samples reanalyzed?                                                                         |     | X           |    |
| Matrix Spikes                                                                                                |     |             |    |
| Is there a matrix spike recovery form present?                                                               | X   | <del></del> |    |
| Were matrix spikes analyzed at the required frequency?                                                       | X   |             |    |
| How many spike recoveries were outside of QC limits?                                                         |     |             |    |
| <u>0</u> out of <u>4</u>                                                                                     |     |             |    |
| How many RPDs for matrix spike and matrix spike duplicate were outside of QC limits?                         |     |             |    |
|                                                                                                              |     |             |    |
| Blanks                                                                                                       |     |             |    |
| is a Method Blank Summary Form present?                                                                      | X   |             |    |
| Has a method blank been analyzed for each set of samples or for each 20 samples, whichever is more frequent? | X   |             |    |
| Do any method/reagent/instrument blanks have positive results?                                               |     | X           |    |
| Do any field/rinse blanks have positive results?                                                             |     |             | ×  |
| Are there field/rinse/equipment blanks associated with every sample?                                         |     |             | ×  |

#### PCB Data Review Checklist - Page 2

|                                                                                                                 | YES      | NO          | <u> </u>    |
|-----------------------------------------------------------------------------------------------------------------|----------|-------------|-------------|
| Calibration and GC Performance                                                                                  |          |             |             |
| Are the following chromatograms and data printouts == present?                                                  |          |             |             |
| Arocior 1016/1260                                                                                               | <u> </u> |             |             |
| Aroclor 1221                                                                                                    | X        |             |             |
| Aroclor 1232                                                                                                    | <u> </u> |             |             |
| Arocior 1242                                                                                                    | <u> </u> | <del></del> | <del></del> |
| Aroclor 1248                                                                                                    | <u> </u> |             |             |
| Aroclor 1254                                                                                                    | X        |             |             |
| Are Initial Calibration Summary Forms present and complete for each column and analytical sequence?             | X        | —           |             |
| Are the linearity criteria for the initial analyses within limits for both columns (20% RSD)                    | x        |             |             |
| Have all samples been injected within a 12 hour period beginning with the injection of a calibration standard?  | X        |             |             |
| Is a Calibration Verification Summary Form present and complete for each continuing standard analyzed?          | X        |             |             |
| Are %D values for all compounds within limits (less than 15%)?                                                  | X        |             |             |
| Analytical Sequence Check                                                                                       |          |             |             |
| is a analytical sequence form present and complete for each column and each period of analyses?                 | X        | -           |             |
| Was the proper analytical sequence followed?                                                                    | X        |             |             |
| Cleanup Efficiency Verification                                                                                 |          |             |             |
| If GPC cleanup was performed, is Gel. Permeation Chromatography Check Form present?                             | -        |             | X           |
| Are percent recoveries of the compounds used to check the efficiency of the cleanup procedure within QC limits? | X        |             |             |
| PCB Identification                                                                                              |          |             |             |
| Is both a combined and single column Aroclor Identification Report present for every sample?                    | <u> </u> | ·           |             |
| Do the combined column and individual column Aroclor identifications agree?                                     | X        |             |             |
| Were there any false negatives?                                                                                 |          | X           |             |

#### PCB Data Review Checklist - Page 3

|                                                                                                | YES         | NO          | NA_ |
|------------------------------------------------------------------------------------------------|-------------|-------------|-----|
| Was GC/MS confirmation provided when required?                                                 |             | <del></del> | X   |
| Compound Quantitation and Reported Detection Limits                                            | <u>s</u>    |             |     |
| Are the reporting limits adjusted to reflect sample dilutions, and for soils, sample moisture? | <u> </u>    |             |     |
| Chromatogram Quality                                                                           |             |             |     |
| Were the baselines stable?                                                                     | <u> </u>    |             |     |
| Were any electronegative displacement (negative peaks) or unusual peaks detected?              | <del></del> | x           |     |
| Field Duplicates                                                                               |             |             |     |
| Were field duplicates submitted with the samples?                                              |             |             | X   |

#### PCB Holding Time and Surrogate Recovery Summary

| Sample !D | Holding Time | Surrogates |     |  |
|-----------|--------------|------------|-----|--|
|           |              | TCX        | DCB |  |
| K40573    |              |            |     |  |
| K40574    |              |            |     |  |
| K40551-C  |              |            |     |  |
| K40564-C  | · ·          |            |     |  |
| K40565-C  |              | <u> </u>   |     |  |
| K40566-C  |              | <u> </u>   |     |  |
| K40567-C  |              |            |     |  |
| K40558    |              |            |     |  |
| K40559    |              | <u> </u>   |     |  |
| K40560    |              |            |     |  |
| K40561    |              |            |     |  |
| K40562    |              |            |     |  |
| K40563    |              |            |     |  |
| K40575    |              |            |     |  |
| K40576    |              |            |     |  |
| K40577    |              |            |     |  |
| K40578    |              |            |     |  |
| K40579    |              |            |     |  |
| K40580    |              |            |     |  |
| K40582    |              |            |     |  |
|           |              |            |     |  |
|           |              |            |     |  |
|           |              |            |     |  |
|           |              |            |     |  |
|           |              |            |     |  |

Surrogate Standards TCX Tetrachloro-m-xylene DCB Decachlorobiphenyl

Qualifiers:

D Surrogates diluted out

Recovery high Recovery low

Unless otherwise noted, all parameters are within specified limits.

#### PCB Calibration Summary

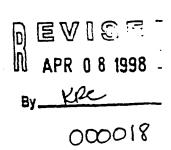
Instrument: <u>HP3327</u> Column: RTX-35 / RTX-5

| Date                 | 3/04/98-        | 3/05/98       | 3/05/98       | 3/05          | 3/05          | 3/05          | 3/06        | 3/06     |
|----------------------|-----------------|---------------|---------------|---------------|---------------|---------------|-------------|----------|
| Time:                | 3/05/98         | 0927          | 0953_         | 1505          | 1531          | 2017          | 0104        | 0:30     |
|                      | Initial<br>Cal. | Cont.<br>Cal. | Cont.<br>Cal. | Cont.<br>Cal. | Cont.<br>Cal. | Cont.<br>Cal. | Cont<br>Cal | Cont.    |
|                      | %RSD            | %D            | %D            | %D            | <b>%</b> D    | %D            | %D          | % D      |
| Arocior 1016         | ok              |               |               |               |               |               |             |          |
| Arociar 1221         | ok              |               |               |               |               |               |             |          |
| Arocior 1232         | ok              |               |               |               |               |               |             | ļ        |
| Aroclor 1242         | ok              |               |               |               | ok            |               |             |          |
| Araciar 1248         | ok              | ok            |               | ok            |               |               | ok          |          |
| Arocior 1254         | ok              |               |               |               |               | ok            |             |          |
| Aroclor 1260         | ok              |               | ok            |               |               |               |             | ok       |
| Tetrachioro-m-xviene | ok              |               |               |               |               |               | <u> </u>    |          |
| Decachlorobiphenyl   | ok              |               |               |               |               |               | <u> </u>    |          |
| Affected Samples:    |                 |               |               |               |               |               |             | <u> </u> |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               |               |               |               |             |          |
|                      |                 |               |               | <u> </u>      |               |               |             |          |

CORRECTED ANALYSIS SUMMARY FORMS

|                  |                   |      |           |                  |          | K40574 |
|------------------|-------------------|------|-----------|------------------|----------|--------|
| Lab Name:        | ITS Environmental | _    | Lab Code: | INCHVT           |          |        |
| Contract:        | 91082             | _    | Case:     | PCB              | SDG:     | FISH04 |
| Phase Type:      | BIOTA             | _    |           | Lab Sample ID:   | 345522   |        |
| Phase Weight:    | 10.3              | (g)  |           | Date Received:   | 10/23/97 |        |
| njection Volume: | 1.0               | (uL) |           | Date Extracted:  | 02/23/98 |        |
| Dilution Factor: | 1.0               |      |           | Date Analyzed:   | 03/05/98 |        |
| % Solids:        | 100 Le 418194     | -    |           | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49                    | U         |
| 11104-28-2 | Arocior-1221 | 49                    | U         |
| 11141-16-5 | Aroclor-1232 | 49                    | Ü         |
| 53469-21-9 | Aroclor-1242 | 49                    | Ū         |
| 12672-29-6 | Aroctor-1248 | 130                   | i i       |
| 11097-69-1 | Arocior-1254 | 230                   |           |
| 11096-82-5 | Arocior-1260 | 53                    |           |



| :      | K40551-C |   |
|--------|----------|---|
| SDG:   | FISH04   | _ |
| 345523 |          |   |

| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           | <u> </u> |        |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH04 |
| Phase Type:       | BIOTA             | _         | Lab Sample ID:   | 345523   |        |
| Phase Weight:     | 10.0              | (g)<br>   | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/26/98 |        |
| Dilution Factor:  | 2.0               |           | Date Analyzed:   | 03/05/98 |        |
| % Solids:         | 100 VAC 418193    | -         | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 100                   | U         |
| 11104-28-2 | Arocior-1221 | 100                   | υ         |
| 11141-16-5 | Arocior-1232 | 100                   | U         |
| 53469-21-9 | Aroctor-1242 | 100                   | U         |
| 12672-29-6 | Aroclor-1248 | 100                   | U         |
| 11097-69-1 | Aroctor-1254 | 220                   |           |
| 11096-82-5 | Araclor-1260 | 100                   | U         |

|                  |                   |      | •         |                  | K        | (40564-C |             |
|------------------|-------------------|------|-----------|------------------|----------|----------|-------------|
| Lab Name:        | ITS Environmental | _    | Lab Code: | INCHVT           |          |          |             |
| Contract:        | 91082             | _    | Case:     | PCB              | SDG:     | FISH04   | <del></del> |
| Phase Type:      | BIOTA             | _    |           | Lab Sample ID:   | 345524   |          |             |
| Phase Weight:    | 10.0              | (g)  |           | Date Received:   | 10/23/97 |          |             |
| njection Volume: | 1.0               | (uL) |           | Date Extracted:  | 02/26/98 |          |             |
| Dilution Factor: | 5.0               | _    |           | Date Analyzed:   | 03/05/98 |          |             |
| % Solids:        | 100 VEL 418188    | _    |           | Sulfur Clean-up: | Y        |          | (Y/N)       |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 250                   | U         |
| 11104-28-2 | Aroclor-1221 | 250                   | U         |
| 11141-16-5 | Aroclor-1232 | 250                   | Ü         |
| 53469-21-9 | Aroclor-1242 | 250                   | U         |
| 12672-29-6 | Arocior-1248 | 950                   |           |
| 11097-69-1 | Arocior-1254 | 640                   |           |
| 11096-82-5 | Aroctor-1260 | 220                   | J         |



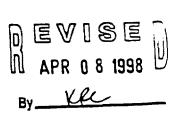
|                   |                   |           |                  | K        | 40565-C |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |         |
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH04  |
| Phase Type:       | BIOTA             |           | Lab Sample ID:   | 345525   |         |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |         |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/26/98 |         |
| Dilution Factor:  | 10.0              |           | Date Analyzed:   | 03/05/98 |         |
| % Solids:         | 100 KPC 418198    |           | Sulfur Clean-up: | Y        | (Y/N)   |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 500                   | U         |
| 11104-28-2 | Aroclor-1221 | 500                   | U         |
| 11141-16-5 | Aroclor-1232 | 500                   | U         |
| 53469-21-9 | Aroclor-1242 | 500                   | U         |
| 12672-29-6 | Aroctor-1248 | 700                   |           |
| 11097-69-1 | Arocior-1254 | 440                   | j         |
| 11096-82-5 | Aroclor-1260 | 500                   | U         |

EPA SAMPLE NO.

|                   |                   |           |                  | K4       | 10566-C |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |         |
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH04  |
| Phase Type:       | BIOTA             |           | Lab Sample ID:   | 345526   |         |
| Phase Weight:     | 10.1              | (g)       | Date Received:   | 10/23/97 |         |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/26/98 |         |
| Dilution Factor:  | 3.0               |           | Date Analyzed:   | 03/05/98 |         |
| % Solids:         | 100 xpc 418198    |           | Sulfur Clean-up: | Y        | (Y/N)   |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 150                      | U         |
| 11104-28-2 | Arocior-1221 | 150                      | U         |
| 11141-16-5 | Arocior-1232 | 150                      | U         |
| 53469-21-9 | Arocior-1242 | 150                      | U         |
| 12672-29-6 | Aroclor-1248 | 670                      |           |
| 11097-69-1 | Aroclor-1254 | 660                      |           |
| 11096-82-5 | Arocior-1260 | 170                      |           |



|                  |                   |        |      |                  | ,        | K40567-C |      |
|------------------|-------------------|--------|------|------------------|----------|----------|------|
| Lab Name:        | ITS Environmental | Lab Co | ode: | INCHVT           |          |          |      |
| Contract:        | 91082             | _ c.   | ase: | PCS              | SDG:     | FISH04   |      |
| Phase Type:      | вюта              |        |      | Lab Sample ID:   | 345527   |          |      |
| Phase Weight:    | 10.0              | (g)    |      | Date Received:   | 10/23/97 |          |      |
| njection Volume: | 1.0               | (uL)   |      | Date Extracted:  | 02/26/98 |          |      |
| Dilution Factor: | 2.0               |        |      | Date Analyzed:   | 03/05/98 |          |      |
| % Salids:        | 100 xh 418/48     |        |      | Sulfur Clean-up: | Y        | (        | Y/N) |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 100                   | U         |
| 11104-28-2 | Aroclor-1221 | 100                   | U         |
| 11141-16-5 | Aroctor-1232 | 100                   | U         |
| 53469-21-9 | Arocior-1242 | 100                   | U         |
| 12672-29-6 | Arocior-1248 | 320                   |           |
| 11097-69-1 | Aroctor-1254 | 190                   |           |
| 11096-82-5 | Aroclor-1260 | 100                   | U         |

EPA SAMPLE NO.

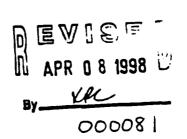
|                   |                   |      |           |                  | 1        | K40558 |       |   |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------|---|
| Lab Name:         | ITS Environmental | _    | Lab Code: | INCHVT           |          |        |       |   |
| Contract:         | 91082             | -    | Case:     | РСВ              | SDG:     | FISH04 |       | - |
| Phase Type:       | BIOTA             | _    |           | Lab Sample ID:   | 345528   |        |       |   |
| Phase Weight:     | 10.0              | (g)  |           | Date Received:   | 10/23/97 |        |       |   |
| injection Volume: | 1.0               | (uL) |           | Date Extracted:  | 02/26/98 |        |       |   |
| Dilution Factor:  | 1.0               | _    |           | Date Analyzed:   | 03/05/98 |        |       |   |
| % Solids:         | 180 YAL 4/8/48    | -    |           | Sulfur Clean-up: | Y        | (      | (Y/N) |   |
|                   |                   |      |           |                  |          |        |       |   |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                       | U         |
| 11104-28-2 | Arocior-1221 | 50                       | 1 U       |
| 11141-16-5 | Aroclor-1232 | 50                       | U         |
| 53469-21-9 | Arocior-1242 | 50                       | Ŋ         |
| 12672-29-6 | Aroclor-1248 | 50                       | U         |
| 11097-69-1 | Arocior-1254 | 72                       |           |
| 11096-82-5 | Arocior-1260 | 50                       | U         |

|      | K40559 |  |  |  |
|------|--------|--|--|--|
| SDG: | FISH04 |  |  |  |

| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          | <u></u> |
|-------------------|-------------------|-----------|------------------|----------|---------|
| Contract:         | 91082             | Case:     | РСВ              | SDG:     | FISH04  |
| Phase Type:       | вюта              |           | Lab Sample ID:   | 345529   |         |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |         |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |         |
| Dilution Factor:  | 1.0               |           | Date Analyzed:   | 03/05/98 |         |
| % Solids:         | 100 KR 418/48     |           | Sulfur Clean-up: | Y        | (Y/N)   |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                    | Ú         |
| 11104-28-2 | Arocior-1221 | 50                    | U         |
| 11141-16-5 | Aroctor-1232 | 50                    | U         |
| 53469-21-9 | Arocior-1242 | 50                    | U         |
| 12672-29-6 | Arocior-1248 | 50                    | U         |
| 11097-69-1 | Aroclor-1254 | 28                    | J         |
| 11096-82-5 | Aroclor-1260 | 50                    | U         |

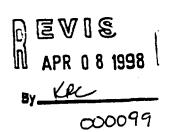


|                   |                   |           |                  | 1        | K40560 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |        |
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH04 |
| Phase Type:       | BIOTA             | _         | Lab Sample ID:   | 345530   |        |
| Phase Weight:     | 10.2              | (g)       | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |        |
| Dilution Factor:  | 1.0               |           | Date Analyzed:   | 03/05/98 |        |
| % Solids:         | 100 xec 4/8/98    | ·<br>{    | Sulfur Clean-up: | Y        | (Y/N)  |
|                   |                   |           |                  |          |        |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49                       | U         |
| 11104-28-2 | Aroclor-1221 | 49                       | U         |
| 11141-16-5 | Arocior-1232 | 49                       | U         |
| 53469-21-9 | Arocior-1242 | 49                       | Ú         |
| 12672-29-6 | Arocior-1248 | 49                       | U         |
| 11097-69-1 | Arocior-1254 | 78                       |           |
| 11096-82-5 | Aracior-1260 | 49                       | U         |

|                  |                   |      |           |                  |          | K40561 |      |
|------------------|-------------------|------|-----------|------------------|----------|--------|------|
| Lab Name:        | ITS Environmental | _    | Lab Code: | INCHVT           |          |        |      |
| Contract:        | 91082             | -    | Case:     | PCB              | SDG: _   | FISH04 |      |
| Phase Type:      | вюта              | _    |           | Lab Sample ID:   | 345531   |        |      |
| Phase Weight:    | 10.2              | (g)  |           | Date Received:   | 10/23/97 |        |      |
| njection Volume: | 1.0               | (uL) |           | Date Extracted:  | 02/23/98 |        |      |
| Dilution Factor: | 1.0               | _    |           | Date Analyzed:   | 03/05/98 |        |      |
| % Solids:        | 105 VPC 418198    | -    |           | Sulfur Clean-up: | Y        |        | Y/N) |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 49                    | U         |
| 11104-28-2 | Aroclor-1221 | 49                    | U         |
| 11141-16-5 | Aroclor-1232 | 49                    | U         |
| 53469-21-9 | Arocior-1242 | 49                    | U         |
| 12672-29-6 | Arocior-1248 | 49                    | U         |
| 11097-69-1 | Aroclor-1254 | 100                   |           |
| 11096-82-5 | Arocior-1260 | 72                    |           |



|                   |                   |      |       |                  |          | K40562 |      |
|-------------------|-------------------|------|-------|------------------|----------|--------|------|
| Lab Name:         | ITS Environmental | Lab  | Code: | INCHVT           | <u></u>  |        |      |
| Contract:         | 91082             |      | Case: | PCB              | SDG:     | FISH04 |      |
| Phase Type:       | ВІОТА             | _    |       | Lab Sample ID:   | 345532   |        |      |
| Phase Weight:     | 10.1              | (g)  |       | Date Received:   | 10/23/97 |        |      |
| Injection Volume: | 1.0               | (uL) |       | Date Extracted:  | 02/23/98 |        |      |
| Dilution Factor:  | 1.0               |      |       | Date Analyzed:   | 03/05/98 |        |      |
| % Solids:         | 100 per 4/8/98    |      |       | Sulfur Clean-up: | Y        | (Y     | 7/N) |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |  |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroclor-1016 | 50                    | U         |  |
| 11104-28-2 | Arocior-1221 | 50                    | U         |  |
| 11141-16-5 | Arocior-1232 | 50                    | U         |  |
| 53469-21-9 | Aroclor-1242 | 50                    | U         |  |
| 12672-29-6 | Aroclor-1248 | 50                    | U         |  |
| 11097-69-1 | Aroctor-1254 | 44                    | J         |  |
| 11096-82-5 | Aroclor-1260 | 50                    | U         |  |

EPA SAMPLE NO.

|              | K40563 |   |
|--------------|--------|---|
| SDG:         | FISH04 | _ |
| <br>345533   |        |   |
| <br>10/23/97 | 7      |   |

| Lab Name:         | ITS Environmental | Lab C      | ode: | INCHVT           |          |        |
|-------------------|-------------------|------------|------|------------------|----------|--------|
| Contract:         | 91082             | _          | ase: | РСВ              | SDG:     | FISH04 |
| Phase Type:       | BIOTA             | _          |      | Lab Sample ID:   | 345533   |        |
| Phase Weight:     | 10.1              | (g)        |      | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)       |      | Date Extracted:  | 02/23/98 |        |
| Dilution Factor:  | 1.0               | _          |      | Date Analyzed:   | 03/05/98 |        |
| % Solids;         | 100 CR 41819      | <u>.</u> g |      | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                       | U         |
| 11104-28-2 | Aroclor-1221 | 50                       | . U       |
| 11141-16-5 | Aroctor-1232 | 50                       | U         |
| 53469-21-9 | Aroclor-1242 | 50                       | U         |
| 12672-29-6 | Aroclor-1248 | 50                       | U         |
| 11097-69-1 | Aroclor-1254 | 83                       |           |
| 11096-82-5 | Aroclor-1260 | 50                       | U         |

EPA SAMPLE NO.

K40575 ITS Environmental INCHVT Lab Name: Lab Code: 91082 PCB FISH04 Contract: Case: SDG: BIOTA 345534 Phase Type: Lab Sample ID: 10.0 (9) 10/23/97 Phase Weight: **Date Received:** 1.0 (uL) 02/23/98 Injection Volume: Date Extracted: Dilution Factor: 3.0 03/05/98 Date Analyzed: 100 KRL 4/8/98 Υ (Y/N) % Solids: Sulfur Clean-up:

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER   |  |
|------------|--------------|-----------------------|-------------|--|
| 12674-11-2 | Aroclor-1016 | 150                   | U           |  |
| 11104-28-2 | Aroclor-1221 | 150                   | U           |  |
| 11141-16-5 | Aroclor-1232 | 150                   | U           |  |
| 53469-21-9 | Aroclor-1242 | 150                   | U           |  |
| 12672-29-6 | Arocior-1248 | 150                   | U           |  |
| 11097-69-1 | Aroclor-1254 | 230                   | <del></del> |  |
| 11096-82-5 | Aroclor-1260 | 150                   | U           |  |

EPA SAMPLE NO.

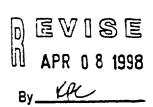
K40576

| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |        |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Contract:         | 91082             | Case:     | РСВ              | SDG:     | FISH04 |
| Phase Type:       | BIOTA             |           | Lab Sample ID:   | 345535   |        |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |        |
| Dilution Factor:  | 1.0               |           | Date Analyzed:   | 03/05/98 |        |
| % Solids:         | 100 CFC AIRIAY    |           | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |  |
|------------|--------------|-----------------------|-----------|--|
| 12674-11-2 | Aroctor-1016 | 50                    | U         |  |
| 11104-28-2 | Aroclor-1221 | 50                    | U         |  |
| 11141-16-5 | Aroclor-1232 | 50                    | U         |  |
| 53469-21-9 | Aroclor-1242 | 50                    | υ         |  |
| 12672-29-6 | Aroclor-1248 | 180                   |           |  |
| 11097-69-1 | Aroclor-1254 | 140                   |           |  |
| 11096-82-5 | Arocior-1260 | 34                    | J         |  |

|                  |                   |           |                  | •        | (40577      |
|------------------|-------------------|-----------|------------------|----------|-------------|
| Lab Name:        | ITS Environmental | Lab Code: | INCHVT           |          |             |
| Contract:        | 91082             | Case:     | РСВ              | SDG:     | FISH04      |
| Phase Type:      | BIOTA             |           | Lab Sample ID:   | 345536   |             |
| Phase Weight:    | 10.0              | (g)       | Date Received:   | 10/23/97 | <del></del> |
| njection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |             |
| Dilution Factor: | 1.0               |           | Date Analyzed:   | 03/05/98 |             |
| % Solids:        | 100 KRC 418/48    |           | Sulfur Clean-up: | Y        | (Y/N)       |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER   |
|------------|--------------|--------------------------|-------------|
| 12674-11-2 | Aroclor-1016 | 50                       | U           |
| 11104-28-2 | Arocior-1221 | 50                       | U           |
| 11141-16-5 | Arocior-1232 | 50                       | U           |
| 53469-21-9 | Arocior-1242 | 50                       | U           |
| 12672-29-6 | Aroclor-1248 | 140                      | <u> </u>    |
| 11097-69-1 | Arocior-1254 | 150                      | <del></del> |
| 11096-82-5 | Arocior-1260 | 31                       | <del></del> |



EPA SAMPLE NO.

(Y/N)

K40578 INCHVT Lab Code: ITS Environmental Lab Name: FISH04 PCB SDG: 91082 Case: Contract: 345537 BIOTA Lab Sample ID: Phase Type: 10/23/97 10.0 (g) Date Received: Phase Weight: 02/23/98 (uL) 1.0 Date Extracted: Injection Volume: 03/05/98 1.0 Date Analyzed: Dilution Factor: 100 KRC 418198

% Solids:

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Arocior-1016 | 50                    | Ü         |
| 11104-28-2 | Arocior-1221 | 50                    | U         |
| 11141-16-5 | Arocior-1232 | 50                    | U         |
| 53469-21-9 | Arocior-1242 | 130                   |           |
| 12672-29-6 | Aroctor-1248 | 50                    | U         |
| 11097-69-1 | Arocior-1254 | 250                   |           |
| 11096-82-5 | Aroclor-1260 | 50                    | U         |

Sulfur Clean-up:

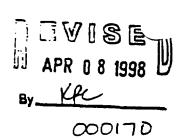
EPA SAMPLE NO.

|                   |                   |      |         |                  |          | K40579 |             |
|-------------------|-------------------|------|---------|------------------|----------|--------|-------------|
| Lab Name:         | ITS Environmental | La   | b Code: | INCHVT           |          |        |             |
| Contract:         | 91082             |      | Case:   | PC8              | SDG:     | FISH04 | <del></del> |
| Phase Type:       | BIOTA             |      |         | Lab Sample ID:   | 345538   |        |             |
| Phase Weight:     | 10.0              | (g)  |         | Date Received:   | 10/23/97 |        |             |
| Injection Volume: | 1.0               | (uL) |         | Date Extracted:  | 02/23/98 |        |             |
| Dilution Factor:  | 1.0               |      |         | Date Analyzed:   | 03/05/98 |        |             |
| % Solids:         | 100 KPC 418198    |      |         | Sulfur Clean-up: | Y        |        | Y/N)        |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                    | Ú         |
| 11104-28-2 | Arocior-1221 | 50                    | U         |
| 11141-16-5 | Arociar-1232 | 50                    | Ü         |
| 53469-21-9 | Aroclor-1242 | 50                    | U         |
| 12672-29-6 | Aroctor-1248 | 98                    |           |
| 11097-69-1 | Araclor-1254 | 170                   |           |
| 11096-82-5 | Aroclor-1260 | 33                    | J         |

|                   |                   |      |           |                  |          | K40580 |             |
|-------------------|-------------------|------|-----------|------------------|----------|--------|-------------|
| Lab Name:         | ITS Environmental |      | Lab Code: | INCHVT           | L        |        |             |
| Contract:         | 91082             |      | Case:     | PCB              | SDG:     | FISH04 | <del></del> |
| Phase Type:       | BIOTA             |      |           | Lab Sample ID:   | 345539   |        | -           |
| Phase Weight:     | 10.0              | (g)  |           | Date Received:   | 10/23/97 |        |             |
| Injection Volume: | 1.0               | (uL) |           | Date Extracted:  | 02/23/98 |        | _           |
| Dilution Factor:  | 1.0               |      |           | Date Analyzed:   | 03/05/98 |        |             |
| % Solids:         | 100 KR 418198     |      |           | Sulfur Clean-up: | Y        |        | (Y/N)       |

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                    | U         |
| 11104-28-2 | Arocior-1221 | 50                    | Ü         |
| 11141-16-5 | Arocior-1232 | 50                    | U         |
| 53469-21-9 | Aroclor-1242 | 50                    | J         |
| 12672-29-6 | Aroclor-1248 | 50                    | U         |
| 11097-69-1 | Aroclor-1254 | 110                   |           |
| 11096-82-5 | Aroclor-1260 | 50                    | U         |



|                   |                   |           |                  |          | K40581 |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |        |
| Contract:         | 91082             | Case:     | PCS              | SDG:     | FISH04 |
| Phase Type:       | вюта              | _         | Lab Sample ID:   | 345540   |        |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |        |
| Dilution Factor:  | 1.0               | _         | Date Analyzed:   | 03/05/98 |        |
| % Solids:         | 100 KR 4/8/98     | _         | Sulfur Clean-up: | Y        | (Y/N)  |

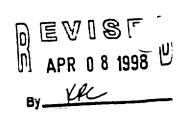
| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 50                    | U         |
| 11104-28-2 | Arocior-1221 | 50                    | U         |
| 11141-16-5 | Arocior-1232 | 50                    | U         |
| 53469-21-9 | Aroclor-1242 | 50                    | U         |
| 12672-29-6 | Arocior-1248 | 150                   |           |
| 11097-69-1 | Arocior-1254 | 160                   |           |
| 11096-32-5 | Aroclor-1260 | 50                    | U         |

EPA SAMPLE NO.

K40581MS

ITS Environmental INCHVT Lab Code: Lab Name: 91082 -PCB SDG: FISH04 Case: Contract: 345540MS BIOTA Lab Sample ID: Phase Type: 10/23/97 10.0 (g) Date Received: Phase Weight: 02/23/98 1.0 (uL) Date Extracted: Injection Volume: 03/05/98 10.0 Date Analyzed: Dilution Factor: Y 108 KR 418198 (Y/N) Sulfur Clean-up: % Solids:

| CAS NO.    | COMPOUND     | CONCENTRATION (ug/Kg) | QUALIFIER |
|------------|--------------|-----------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500                   | Ü         |
| 11104-28-2 | Arocior-1221 | 500                   | U         |
| 11141-16-5 | Arocior-1232 | 500                   | U         |
| 53469-21-9 | Aroclor-1242 | 6100                  |           |
| 12672-29-6 | Aroclor-1248 | 500                   | U         |
| 11097-69-1 | Aroclor-1254 | 6200                  |           |
| 11096-82-5 | Araciar-1260 | - 500                 | U         |



|                   |                   |           |                  | K405     | 81MSD  |
|-------------------|-------------------|-----------|------------------|----------|--------|
| Lab Name:         | ITS Environmental | Lab Code: | INCHVT           |          |        |
| Contract:         | 91082             | Case:     | PCB              | SDG:     | FISH04 |
| Phase Type:       | BIOTA             |           | Lab Sample ID:   | 345540MD |        |
| Phase Weight:     | 10.0              | (g)       | Date Received:   | 10/23/97 |        |
| Injection Volume: | 1.0               | (uL)      | Date Extracted:  | 02/23/98 |        |
| Dilution Factor:  | 10.0              |           | Date Analyzed:   | 03/05/98 |        |
| % Solids:         | 100 CRC 418198    |           | Sulfur Clean-up: | Y        | (Y/N)  |

| CAS NO.    | COMPOUND     | CONCENTRATION<br>(ug/Kg) | QUALIFIER |
|------------|--------------|--------------------------|-----------|
| 12674-11-2 | Aroclor-1016 | 500                      | i U       |
| 11104-28-2 | Aroclor-1221 | 500                      | Ü         |
| 11141-16-5 | Arocior-1232 | 500                      | U         |
| 53469-21-9 | Aroclor-1242 | 5400                     |           |
| 12672-29-6 | Aroclor-1248 | 500                      | Ū         |
| 11097-69-1 | Arocior-1254 | 5500                     | 1         |
| 11096-82-5 | Arocior-1260 | 500                      | ) U       |

PERCENT LIPID ANALYSES

#### Percent Lipids Results

| Sample ID | Lab ID | Matrix | Result |
|-----------|--------|--------|--------|
| K40574    | 345522 | tissue | 0.3%   |
| K40551-C  | 345523 | tissue | 1.5%   |
| K40564-C  | 345524 | tissue | 2.4%   |
| K40565-C  | 345525 | tissue | 2.9%   |
| K40566-C  | 345526 | tissue | 2 2%   |
| K40567-C  | 345527 | tissue | 3.2%   |
| K40558    | 345528 | tissue | 0 6%   |
| K40559    | 345529 | tissue | 0.2%   |
| K40560    | 345530 | tissue | 0.4%   |
| K40561    | 345531 | tissue | 0.3%   |
| K40562    | 345532 | tissue | 0.4%   |
| K40563    | 345533 | tissue | 0.3%   |
| K40575    | 345534 | tissue | 0.5%   |
| K40576    | 345535 | tissue | 0.6%   |
| K40577    | 345536 | tissue | 0.4%   |
| K40578    | 345537 | tissue | 0.7%   |
| K40579    | 345538 | tissue | 0.3%   |
| K40580    | 345539 | tissue | 0.4%   |
| K40582    | 345540 | tissue | 0.4%   |
|           |        |        |        |
|           |        | ·      |        |
|           |        |        |        |
|           |        |        |        |